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HÆMATEMESIS: NEGATIVE FINDINGS AT EXPLORATION.

By G. W. MILTON,

Associate Professor of Surgery, University of Sydney.

THE surgeon operating on a patient for hæmatemesis is occasionally confronted with the situation of being unable to demonstrate any site for the hæmorrhage. Although there has been some controversy as to the best method of dealing with this situation, several recent authorities advise a high subtotal gastrectomy (Aird, 1957; Maingot, 1957; Tanner, 1955; Ives, 1949). However, there are some disadvantages to blind subtotal gastrectomy for acute hæmorrhage. Acute or subacute ulcer responsible for the hæmorrhage may be situated very high in the stomach. The removal of such a lesion involves all the subsequent risks of high gastrectomy for a lesion which may well have healed without trace on efficient medical management, had surgical intervention not become essential to control hæmorrhage. Acute gastric erosions may be mutiple, and bleeding may continue after gastrectomy from erosions in the gastric remnant or from unseen duodenal ulcer. Amendola (1949) described gastroduodenotomy with lavage in order to inspect the interior of the stomach. Ives (1949) held that Amendola's method would cause serious risk of infection. Spencer and Maloney (1956) describe a technique for gastrotomy, and stress the value of careful inspection of the gastric mucosa in cases of gastro-intestinal bleeding of obscure origin. A technique of wide bloodless gastrotomy was recently developed for a series of animal experiments. The wounds in the dogs' stomachs healed rapidly without undue scarring, and it was therefore felt safe to use the same technique for gastrotomy in patients showing no cause for alimentary hæmorrhage at laparotomy.

Technique.

Before operation, the patient's blood is grouped and matched and 2 litres are provided for transfusion and a large-bore intragastric tube is inserted.

The abdomen is opened through a supraumbilical median or paramedian incision. The anterior surface of the stomach and duodenum is examined. An incision in the greater omentum close to the stomach exposes the lesser sac and the posterior surface of the stomach. The second, third and fourth parts of the duodenum, the upper three feet of the jejunum and the œsophageal hiatus are examined. If no satisfactory explanation for the hæmorrhage has been found, gastrotomy is carried out by the following technique.

The peritoneal cavity is protected from contamination by the insertion of three large abdominal packs. One pack is placed in the lesser sac and also covers the omentum and transverse colon. A second pack is inserted over the fundus of the stomach on the anterior surface and is

spread to protect the wound edge on the left side. The third pack covers the duodenum and extends into the hepato-renal pouch. The anterior stomach wall is held with four stay sutures of black silk. These sutures are placed about an inch from the greater curvature, in such a way that approximately four inches of the anterior stomach wall are held between them (Figure I).

Immediately before the stomach is incised, the anæsthetist is asked to aspirate the stomach contents through the intragastric tube, which is then partly withdrawn. The anterior wall of the stomach is then divided one inch from and parallel to the greater curvature for a distance of about four inches. It is important that this

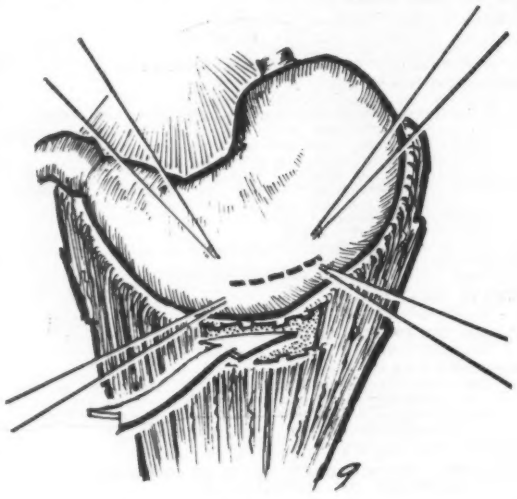

FIGURE I.

Showing the line of the incision and the method of fixing the anterior stomach wall with four stay stitches.

incision is carried out slowly with a diathermy needle and the current set on coagulation, not on cutting. The diathermy division is carried through the serosa and outer muscle coats into the submucosa. The large submucosal blood vessels are then sealed with the diathermy. The division of the mucosa may be done with a knife, or with the diathermy needle set, as before, on coagulation. It is frequently necessary to turn the coagulation current higher than would normally be done, but by this technique it is possible to produce a completely dry incision in the stomach. As soon as a small hole is made in the stomach, any residual content is evacuated with the sucker before the incision is completed. The incision stops at least two inches to the left of the pylorus and must not extend into the pyloric antrum. The reason for this is that in the subsequent closure there will be no risk of narrowing the stomach unduly, provided that the incision is in the body and fundic regions. Any blood clot remaining in the stomach is removed with the sucker. The stay sutures are held firmly, and three large Deaver retractors are inserted into the interior of the stomach. When these are splayed apart, the whole of the cavity of the stomach may be inspected. High in the fundus on either the anterior or posterior surface there may be some difficulty in visualization, in which case the assistant inserts his hand in the peritoneal cavity outside the stomach and invaginates the wall so as to turn it partially inside out. By these means, all the stomach surfaces may be adequately inspected with the mucosa stretched to smooth out any folds. Although through this incision the interior of the duodenum may not be seen, it is possible to feel it with a finger inserted through the pylorus and the thumb on the serosal surface. Acute gastric erosions are visible to the naked eye, particularly if they are bleeding. Sometimes an erosion is covered with a small plug of blood clot, the removal of which produces a brisk hæmorrhage. Any bleeding points or erosions filled with a plug of thrombus are underrun with chromicized gut, so that the mucosa and submucosa are gripped in a figure-of-eight stitch. It is important that the retractors should be manipulated with some gentleness, and soft abdominal packs may be used to cover the metal and protect the delicate mucosa from the full force of the retractor. When hæmostasis from the interior of the stomach has been adequately secured, the incision is closed in three layers in the long axis of the stomach. The full-thickness layer is closed with continuous sutures of 3/0 chromicized catgut on an atraumatic needle; the second layer is a continuous sero-muscular inverting stitch of chromicized catgut on an atraumatic needle; the third layer of interrupted black silk Lambert stitches invaginates the first two layers completely. During the sewing up, it will be observed that the edges of the incision into the stomach are slightly œdematous as a result of the diathermy coagulation, and the final layer of stitches therefore is placed wide of this œdema, which usually extends approximately one-quarter of an inch from the cut edge. The cut surface of the greater omentum is reattached to the stomach in three or four places by tying the long ends of the third layer of stitches across it. As soon as the stomach is closed, the anæsthetist pushes the intragastric tube back into position and irrigates the stomach two or three times with 100 ml. of iced saline. An injection of 20 ml. of 1/1000 adrenaline containing 10,000 units of "Thrombin, Topical" (Parke Davis) and 5 ml. of "Stipven" (Burroughs Wellcome) is given down the tube and left in the stomach. Approximately 6 hours after operation, a slow administration of milk drip is commenced, and the volume of milk administered is increased during the next three days. The patient then advances to a light diet and a full medical regime for peptic ulcer.

Dog Experiments.

A three-inch incision was made into the anterior surface of the stomach of 20 dogs, by means of the diathermy needle set on coagulation, and the wounds were examined at various periods after operation. It was found that in all animal experiments the wounds healed rapidly and without evidence of excessive scarring or constriction. The epithelium grew across the wound, and in some cases even differentiated into the normal cellular types of gastric epithelium. The factors affecting differentiation of healing epithelium will be discussed elsewhere; but in no case was there any evidence of chronic gastric ulcer up to six months after operation (Figure II)[1].

Discussion.

Many authors, including Tanner (1955) and Bruce and Dudley (1959), note that acute ulcers or erosions may not be palpable from the serosal surface of the stomach. Tanner (1955) describes negative findings on exploration for hæmatemesis, and states that "a gastrotomy may be performed, though this rarely gives much further information except that it may reveal multiple small erosions". Bruce and Dudley (1959), reviewing 31 cases of hæmatemesis of obscure origin, performed a gastrotomy on only one occasion. Their review of the reported cases of gastrotomy states that in 15 the cause of the bleeding was demonstrated, and the results were negative in five cases. However, Spencer and Maloney (1956) demonstrated the bleeding point by wide gastrotomy in 10 of 11 cases. These authors, having demonstrated the bleeding point, proceed to partial gastrectomy. Four out of their eleven patients died. Bruce and Dudley (1959) agree with Thieme (1954) that gastrotomy may unnecessarily prolong the operation in a poor-risk patient. At the meeting of the Royal Australasian College of Surgeons held in Adelaide in 1960, both Mr. S. Krantz and Mr. N. Tanner advocated gastrotomy for hæmatemesis of obscure origin.

The success or failure of gastrotomy as a method of identifying the site of acute hæmorrhage from the stomach appears to depend largely on the technique of its

[1] For Figure II see art-paper supplement.

execution. If the stomach wall is divided with a knife, the considerable bleeding from the cut edge renders a large incision too prolonged and dangerous to accomplish in this type of patient, particularly if gastrotomy is immediately followed by partial gastrectomy. The exposure of the interior of the stomach through a small incision is inadequate. The loose mucosal folds must be stretched apart by gently manipulating the Deaver retractors, or by invaginating the stomach wall from the serosal surface in order to display superficial crack-like erosions not actively bleeding at the time of operation. Needless to say, a jet of blood from an erosion or the presence of a clot on its surface makes easier the identification of the site of bleeding.

The time taken to perform gastrotomy and stop the bleeding points with underrunning stitches is less than that required for gastrectomy. Avery Jones and King (1953) analysed the follow-up findings in men suffering from acute gastric ulcers causing hæmorrhage, and found that roughly half the patients returned with radiological evidence of chronic ulcer, and only two out of 20 women developed chronic ulcer. The follow-up investigation of patients after gastrotomy for acute hæmorrhage should therefore be adequate to detect and treat, by gastrectomy if necessary, any developing chronic ulcer. Gastrotomy in these cases is not regarded as the definitive method of treatment, but as a manœuvre to stop acute and severe hæmorrhage to permit a careful medical regime to be instituted. The early irrigation of the stomach with iced saline followed by the intragastric drip administration of milk is an important part of the regime.

It has been shown in dogs that the insertion of chromicized catgut into the gastric mucosa does not cause permanent dedifferentiation of the epithelium, much less ulceration (Milton and Finckh, unpublished). The gastrotomy wounds in these animals also healed without ulceration, in spite of the effects of the diathermy incision and the foreign suture material.

Gastrotomy is not carried out unless the patient is in certain risk from considerable hæmorrhage. Therefore, the risk of contamination of the peritoneum must be weighed against the risk of leaving inadequately controlled bleeding points, or of high gastrectomy in an ill patient. Adequate gastric suction immediately prior to operation leaves the stomach empty except for any clot which cannot be aspirated. In four cases in which this technique has been used, the only evidence of contamination was a mild wound infection in one case. None of the 20 dogs that underwent gastrotomy developed general peritonitis, in spite of the absence of pre-operative suction and post-operative chemotherapy.

Bruce and Dudley (1959) advise that the over-all mortality in these cases should be no more than 10%, and also state that "a subtotal gastric resection will remove the lesion in 75% of patients and will arrest the bleeding in the majority of the remainder". An adequate gastrotomy may lower the mortality and increase the proportion of patients whose bleeding points are controlled by direct visualization and suture.

Summary.

A technique for wide gastrotomy has been described for use in cases in which exploration for hæmatemesis gives negative results.

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CHRONIC AND RECURRENT SMALL-BOWEL OBSTRUCTION: THE NOBLE PLICATION PROCEDURE.[1]

By IAN HAMILTON, M.B., B.S., F.R.C.S., F.R.A.C.S., F.A.C.S.,
Honorary Surgeon, Queen Elizabeth Hospital, Adelaide.

A MOST awkward dilemma not infrequently confronting the abdominal surgeon is the case of intestinal obstruction with massive adhesions. Such a condition can follow one single abdominal operation or multiple operations. It is not proposed to discuss methods of prevention of post-operative adhesions; suffice it to say that certain people, despite the taking of all due care by the surgeon, will develop them, possibly in much the same way as certain people develop keloid scars, although in general rough handling of bowel, heavy suture material and peritoneal infection are probably the main factors. In the past, and still in most lands, such cases are dealt with by laparotomy with mobilization of the adhesions and then suture. As a result of this attitude of resignation to fate, many great hospitals have a pool of such patients having repeated admissions with obstructive episodes. Some settle down with conservative treatment, some have to be operated on and relieved. Noble (1937), working on the theory that if instead of a muddled-up conglomerate of adherent loops of small intestine there could be a safe conversion to an orderly group of adherent loops, then no further trouble should arise, devised the procedure now known as the Noble plication procedure, forming loops of bowel in such a manner that kinks and obstruction might not develop. Since that time, encouraged by Noble's work, many surgeons, particularly in the United States of America, have utilized the method and published results which appear to have established the operation as one which can be safely performed, and which can give satisfactory results to such a point that the above-mentioned pool of patients has been cleared up in those institutions where it has become popular.

My interest in this matter was stimulated through hearing a discussion on it at the Seventh Congress of the Pan-Pacific Surgical Association at Honolulu in 1957. The proponent of the procedure was so enthusiastic about it that it was thought that this must surely be a good operation, although several eminent American surgeons said that they had continued using the traditional methods.

Seabrook (1949) declared that these cases had been a source of worry to him for years and went on to describe several cases treated by the Noble procedure. One of these patients declared afterwards, when well, that he felt that a "miracle" had been performed on him. In some of his cases Seabrook only sutured together several small loops of intestine; in some very extensive suturing was done, even in the presence of gross peritonitis. Some of his patients had a stormy convalescence, not surprisingly; but he declared finally that the spectacular results in his cases, as summarized, had convinced him that this was indeed a very valuable procedure when chronic and recurrent obstruction follow adhesion formation.

[1] Read at a clinical meeting of the South Australian State Branch of the Royal Australasian College of Surgeons, Adelaide, February 24, 1960.

Smith (1955), mentions that in 1949 the Surgical Services of the University of Southern California School of Medicine established policies for the management of acute small-bowel obstruction. These policies primarily are as follows: (i) early surgical intervention; (ii) operative decompression of the severely distended bowel; (iii) attempts to peritonealize raw surfaces developed during enterolysis; (iv) plication in cases of chronic adhesions such as we are now considering. He uses 39 cases of his own for his paper, with the following interesting statistics:

Total	39
Acute small-bowel obstruction	36
Acute small-bowel obstruction with strangulation	23
Acute small-bowel obstruction requiring resection because of non-viable areas	8
Two or more previous laparotomies for obstruction	10
Total plication performed	11
Partial plication performed	13
Resection	8

In his cases of acute obstruction he follows the normal routine of pre-operative decompression and restoration of the fluid and electrolyte balance, followed by early operation. The technique of plication essentially consists of full mobilization of all adherent loops of bowel, and then the suturing together of the loops with continuous locked chromicized catgut sutures placed midway between the mesenteric and antimesenteric borders. This position for the sutures leads to the least risk of loops becoming trapped in between other distended loops. Interrupted sutures have been found to have a tendency to pull out, leading to "fiddle string" adhesions between neighbouring loops. Smith in his summary points out that the selection of patients for this procedure is a distinct problem, and that the best results are obtained in those with acute small-bowel obstruction rather than in those with chronic obstruction, and in those with such extensive peritoneal damage that further obstruction is likely to occur.

Report of a Case.

Mrs. A. consulted me first on October 14, 1946. At that time she was aged 26 years, and gave a history that about nine years previously she had suffered from appendicitis and peritonitis for which she had been treated at the Royal Adelaide Hospital. She recovered, and two years later had the appendix removed. Three years later she had an attack of intestinal obstruction, for which she was operated on at the Royal Adelaide Hospital and relieved. She was well for a long time afterwards, but suffered from recurring "colic in the bowels". For about two years before I first examined her, she had had attacks of pain in the left loin extending across the bottom of the stomach and "dragging" of the left leg. During the attacks she would vomit curdly material and would have pain in the lower part of the back. Apart from this she had had no illness of any importance. Two years previously she had had her "tubes X-rayed", and they were found to be blocked up. Her menstrual history was normal.

Examination of the patient revealed multiple abdominal scars, but no other abnormality. The diagnosis at that stage was that of recurrent partial obstruction from abdominal adhesions. I had her admitted to hospital and performed a laparotomy on October 21. There were masses of intraperitoneal adhesions. These were mobilized, and a side-to-side anastomosis which was found was excised and end-to-end anastomosis was performed. Convalescence was normal; but the patient still continued to complain afterwards of dragging pains in the left side of the abdomen, with some pain shooting down the left leg. Her appetite remained variable, and her sleep was frequently broken by peculiar abdominal symptoms. Her bowels acted daily.

After that, her abdomen was more comfortable, but she suffered intermittently from various abdominal pains. By November 24, 1948, she declared that she had never been without pain for two years, and said that nine days previously she had developed pain in both sides of the abdomen, low down. Menstruation was very irregular. She had cystitis on December 3, 1948, and said that she was vomiting regularly. Full abdominal investigation was carried out, but with negative results. On February 25, 1952, she was having frequent abdominal attacks, and a further laparotomy was advised. I lost sight of her then until July 7, 1958, when she came to see me again. In the meantime she had had a further laparotomy in 1957 for intestinal obstruction. On that occasion she was complaining of severe abdominal pain, central, with a "knotty" feeling; her bowels were obstinate, but retching attacks could ease the pain. Observation in hospital did not lead to any action, as with rest she seemed to settle down.

She was examined by a gynæcologist, who declared that her symptoms were due to pelvic and abdominal adhesions only. There was no improvement, so that on September 12, 1958, a further laparotomy was performed, with mobiliza-

FIGURE IV.
The intestines after organized suturing together of loops.

tion of adhesions only. She recovered from this, although her convalescence was somewhat stormy; but she never settled down properly, and she still complained of irregular colicky abdominal pains. These continued with many ups and downs, and her local doctors were constantly called to give help by a variety of drugs; in fact, she was practically a permanent invalid ("psychiatric" being what I like to call her) and an abdominal cripple. Finally I decided to reopen her abdomen and perform Noble's plication operation. This was done at the Queen Elizabeth Hospital on November 5, 1959. When the abdomen was opened, it was found that the upper part of the jejunum was free of adhesions, but the major part of the small bowel was grossly distorted by adhesions. This portion was completely mobilized—and it was a time-consuming operation—and then plicated. The unaffected jejunum was left free.

The wound healed well, and nothing untoward occurred during the convalescence. She was discharged from hospital on November 18, 13 days after operation, feeling very well. Unfortunately she has since reported back complaining that she "vomits everything". However, she has not lost weight, her bowels act regularly, and there is only minimal abdominal tenderness. She was put under observation for a week in hospital after this, in January, 1960, and appeared well, with no vomiting. A barium meal X-ray examination performed during this period showed the plicated loops of bowel well; the barium moved through the intestinal canal normally.[1]

Discussion.

Here one sees an extraordinary history of 23 years' duration of a life of abdominal misery due to abdominal adhesions, numerous operations and a superadded psychiatric state no doubt due to her physical disability. During this period she had a course of shock therapy without relief, and multiple abdominal operations. If Noble's operation had been carried out earlier, perhaps this unhappy series of events would have been avoided, and indeed I can believe, from reports of the operation, that it would have certainly been worthy of a trial at one of the earlier operations, if we had had the knowledge of the operation and the confidence to carry it out.

Finally, let us look at Noble's original work on this subject. He divides his cases into three groups: (1) Those in which there is a single rough, denuded or raw spot on the intestinal wall after dissection of adherent bowel, the operation being performed to free it from some patho-

[1] For Figures I to III see art-paper supplement.

logical process. He plicates the bowel with running chromicized "00" sutures, starting at the root of the mesentery and carrying them up to the mesenteric margins of the bowel to the angle of the fold. (ii) Those in which there are severely damaged areas. A similar procedure is carried out. (iii) Those in which there is extensive inflammation with marked peritoneal damage. He still carries out much the same procedure, but more radically, adding plications wherever necessary to cover all raw areas, even up to plication of the whole of the small intestine. Noble states that over a period of ten years several hundred patients have been so treated, and that none has subsequently developed any symptoms of adhesions.

Summary.

It would appear that in the Noble plication procedure we may have a very valuable addition to our armamentarium for the treatment of the type of case described, possibly a method which is being sadly neglected, to the detriment of many suitable patients. However, I do not wish it to be thought that I am a blinded advocate of this procedure in obviously unsuitable cases (for example, acute peritonitis).

Acknowledgements.

I wish to thank Mr. Noel Bonnin for most helpful cooperation and encouragement, both with the considerations and with the operation; his assistance was most valuable. My thanks are also due to my Senior Registrar, Mr. Colin Paul, who searched the literature, and whose help was invaluable.

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FURALTADONE — A CLINICAL TRIAL.

By RODERICK MCEWIN, M.B., B.S.,
Assistant Medical Superintendent,

AND

JOHN MARSH, B.Sc.,
Bacteriologist,
Repatriation General Hospital, Springbank, South Australia.

A NEW antibacterial agent, furaltadone, was made available for clinical trial to this hospital in April, 1960.

Furaltadone is a nitrofuran first described by Kefauver *et alii* (1959), and since has been recommended for the oral treatment of systemic infections. It was discovered as a result of a search for an antibacterial drug, effective against staphylococci, which would prevent the emergence of drug-resistant strains of staphylococci, which are an increasingly grave problem in hospitals.

Previously synthesized nitrofurans have been widely used as antibacterials — nitrofurazone, as a topical preparation for wounds and burns, nitrofurantoin in urinary infections, and lately furazolidone in gastroenteritis. These have been effective drugs, the earlier of which have been used in long-continued medication without the development of drug-resistant strains of bacteria (Paul *et alii*, 1952). Several studies have already supported the ability of the nitrofurans to prevent the emergence of resistant strains of staphylococci (Paul *et alii*, 1952; Leming, 1959; Seneca and Lattimer, 1957; Schrire and Engelbrecht, 1960).

Method of Study.

The results contained in this report are from treating patients in the Repatriation General Hospital, Springbank, South Australia, during the period from April to July, 1960. This is a 336 bed hospital treating ex-service patients, 85% of whom are male. Full medical, surgical and psychiatric facilities are available.

In-vitro sensitivity tests were made on bacteria isolated from infected material sent to the laboratory; but most of the specimens of infected urine were excluded from the trial, because these were tested for sensitivity to nitrofurantoin rather than furaltadone.

Patients with various infections were given a course of furaltadone, and all of these are included in the results, except patients who were given furaltadone plus an antibiotic, who were excluded from the trial.

The recommended dose of furaltadone is 15 to 22 mg. per kilogram of body weight per day for adults, and the dose in this series was maintained at 250 mg. four times a day, this being the standard dosage for an adult of average body weight. In four cases the initial dose was increased to 500 mg. The average duration of treatment was six days.

Some patients treated with furaltadone had not had preliminary sensitivity testing of the pathogen, and in such cases results were assessed on clinical change only. It was found in practice that in-vitro sensitivity and clinical response were well correlated.

Bacteriological Results.

The sensitivities of 162 isolations of bacteria to furaltadone and several antibiotics were determined; the results are shown in Table I. The sensitivity testing was done on blood-agar plates directly inoculated with infected material, with discs including 50 μg. of furaltadone. Sensitivity was not recorded as present unless a clear zone if inhibition was seen.

These results agree with previously reported series of pathogens tested for sensitivity to furaltadone (Glas and Britt, 1959; Leming, 1959; Christenson and Tracy, 1960).

Clinical Results.

Forty-eight patients have been treated with furaltadone, the results of treatment being shown in Table II. Twenty-six yielded cultures of pathogenic bacteria. In 21 of these cases, the clinical response was good or satisfactory; the pathogens previously isolated from these patients were *Staphylococcus aureus, Streptococcus pneumoniæ, Streptococcus fæcalis, Hæmophilus influenzæ* and *Escherichia coli*. Twenty-two patients were treated without bacteriological control.

Respiratory Infections.

These included 10 cases of pneumonia, two cases of pneumonitis, eight cases of bronchitis, three cases of bronchitis in patients who had emphysema or asthma as their primary disease, and one case each of bronchiectasis, otitis media and sinusitis.

Some prompt responses to treatment were seen in seriously ill patients. These were people whose condition was serious before they developed their respiratory infection, and prompt antibacterial action was necessary as a life-saving measure. These patients included a woman, aged 84 years, with pneumonia, post-operative pneumonia in a man who had had a total gastrectomy and whose immediate post-operative period was stormy, and a man with carcinoma of the lung. Another patient with severe asthma developed a respiratory infection, which endangered his life. A culture of his sputum showed *Staph. aureus* sensitive only to furaltadone, and the use of the drug was life-saving in his case.

Slower recoveries occurred in patients with respiratory infections and chronic underlying lung disease, such as asthma and emphysema. These results have been assessed as satisfactory with regard only to the response of the infection to the treatment.

The unsatisfactory results occurred in patients infected with *Pseudomonas pyocyanea*, insensitive to furaltadone.

A female hospital assistant, aged 26 years, developed a respiratory infection of one day's duration with râles below the right scapula. She was admitted to hospital and given furaltadone in a dosage of 250 mg. four times a day. Her chest signs had disappeared in two days when she was quite well, and was discharged from hospital.

While this rapid resolution of pneumonitis is not unusual with antibiotics or antibacterials or by unassisted natural recovery, the rapidity of the response has been repeatedly seen with furaltadone, and it is considered that respiratory infections generally, including otitis media, bronchitis, sinusitis and pneumonia, have responded well

TABLE I.

Organism.	Number Tested.	Number Sensitive to Various Agents.
Staphylococcus aureus	51	51 to furaltadone. 49 to chloramphenicol. 35 to streptomycin. 33 to tetracycline. 32 to chlortetraoycline. 14 to penicillin.
Hæmophilus influenza	34	34 to furaltadone.
Streptococcus pneumoniæ[1]	24	24 to furaltadone.
Streptococcus pyogenes	4	4 to furaltadone.
Streptococcus fæcalis	4	4 to furaltadone.
Escherichia coli[2]	17	15 to furaltadone.
Atypical coliforms	2	1 to furaltadone.
Proteus	12	1 to furaltadone.
Pseudomonas pyocyanea	14	0 to furaltadone.

[1] The pneumococcus.

[2] Synonym, *Bacterium coli*.

to this drug. Bacteriological results indicate that most respiratory pathogens are sensitive to furaltadone, so that its use in these infections, without previous isolation and testing of the pathogen, has been usually successful.

Soft-Tissue Infections.

These included boils (two cases), leg ulcer, ulcerated toes, dental abscess, infected sores, infected finger and infected carcinoma of the cheek, mostly due to infection

TABLE II.

Group.	Number of Cases.	Results.		
		Good.	Satisfactory.	Unsatisfactory.
Respiratory infection	26	21	3	2
Soft-tissue infection	8	8	Nil	Nil
Cover for surgery	7	7	Nil	Nil
Urinary infection	3	Nil	Nil	3
Miscellaneous	4	4	Nil	Nil

with *Staph. aureus*, against which organism furaltadone has proved most effective. The drug has had its greatest opportunity against *Staph. aureus*, as this bacterium is the most common pathogen in this hospital. All coagulase-positive staphylococci isolated have been sensitive to furaltadone *in vitro*, and all patients thus infected have recovered with an adequate course of the drug.

The response of soft-tissue infections has been dramatic; quick resolutions and consistently good results have been obtained. Many of these infections are caused by staphylococci resistant to antibiotics (see Table I). This is an increasingly common finding in hospital patients. The tendency to become infected with (or to harbour in the anterior nares) staphylococci resistant to penicillin and other antibiotics is even more marked in hospital staff. Before furaltadone was available, these people presented a difficult problem to the therapist. People thus infected should have a nasal swab taken, and if pathogenic staphylococci are present, should receive concurrent treatment with, say, a topical application of neomycin and polymyxin to the anterior nares.

A nursing sister had had recurrent boils, often several at once, for many weeks. As the boils recurred they became larger, and she received a course of tetracycline (250 mg. four times a day for seven days) without bacteriological investigation. No benefit resulted. She then came under our care, and pus from the next abscess to drain yielded a coagulase-positive staphylococcus sensitive only to furaltadone, chloramphenicol and streptomycin. She was started on furaltdone in a dosage of 250 mg. four times a day. Within two days there was marked decrease in induration about her abscesses, and these rapidly resolved. Her urine was repeatedly found free of sugar, and her blood sugar levels were normal. Two weeks after her six-day course of furaltadone ended, she again developed staphylococcal abscesses, including a lesion of some severity in the mandible under the lower first premolar, which had to be extracted. A coagulase-positive staphylococcus was now grown from her anterior nares. Belated attention to this source of reinfection, plus another course of furaltadone, cleared her infections rapidly.

Use in Surgical Cases.

The operations in the series included nephrectomy, bronchography, thoracotomy, lobectomy (two patients), removal of a carcinoma of the lung and removal of a metallic foreign body from the left tarsus. Furaltadone has a wide spectrum of antibacterial effect and is practically free of side effects. This makes it a suitable drug for antibacterial cover in surgery. We have used it on seven such patients, all known or suspected to be infected with various organisms. All patients have had a smooth post-operative period. One later developed a *P. pyocyanea* infection insensitive to furaltadone, requiring treatment with neomycin and polymyxin.

A male patient, aged 52 years, had had an old (1948) compression fracture of the twelfth thoracic vertebra. For the past two years he had had a discharging sinus from this area, which pre-operatively yielded a coagulase-positive staphylococcus, resistant to penicillin, but sensitive to other antibiotics and furaltadone. The sinus was explored and excised and some bony debris was removed. During operation the dura was inadvertently opened, and 20 to 30 ml. of cerebro-spinal fluid escaped. Post-operative therapy with furaltadone was started, and the wound, which had been closed without drainage, healed by first intention. The post-operative period was uneventful.

Urinary Infections.

These three patients were infected with insensitive strains of *E. coli* and *P. pyocanea*, and the results of treatment have been unsatisfactory. They were treated early in the series because of a report (Glas and Britt, 1959) showing some strains of *Pseudomonas* and *Proteus* to be sensitive to furaltadone. Our experience is that all strains of *Pseudomonas* are insensitive to furaltadone.

Miscellaneous Infections.

These included three cases of osteomyelitis and one of peritonitis. *Staph. aureus* was isolated from three of these patients, and all four patients showed good clinical response.

Side Effects.

Side effects have been minimal and of no consequence. One patient had nausea, which was readily controlled by taking the drug with food or milk. Patients were directly questioned, and ward sisters were asked to report gastric side effects, so it is believed that none have been overlooked. This is a lower incidence of gastric side effects than has been reported by other writers (Christenson and Tracy, 1960; Schrire and Engelbrecht, 1960).

It is known that patients become upset, usually with headache, nausea, vomiting, dyspnœa or constriction in the chest, if they take alcohol during, or within a week of finishing, a course of furaltadone. This is described as the drug's "Antabuse" effect by Schrire and Engelbrecht. One of our patients experienced this effect because we had omitted to warn him of this danger.

Furaltadone occasionally produces darkly-coloured metabolites, excreted in the urine, which is consequently

dark in colour. These metabolites are considered to be harmless. One patient in this series reported this sign.

Other side effects were not seen, and this experience coincides with the reports of other writers, who found infrequent gastric disturbance to be the commonest side effect of the drug. We note a report advising that furaltadone should not be used in the treatment of patients with peptic ulcer or severe hepatic or renal dysfunction (Council on Drugs, 1960). Further experience with the drug is necessary to assess the side effects adequately.

Discussion.

We consider that furaltadone is a useful drug, principally in respiratory and soft-tissue infections, and for antibacterial cover for surgery. It is well tolerated, it has a wide spectrum of effectiveness against the usual pathogens in these diseases, and response to treatment is quick.

An increasing number of pathogenic staphylococci are resistant to antibiotics, but at present they can all be assumed to be sensitive to furaltadone. Other writers have found rare cases of furaltadone-resistant staphylococci — one in 135 isolations (Schrire and Engelbrecht, 1960) and one in 335 isolations (Glas and Britt, 1959) — but no case of resistance occurred in our series of 51 isolations of staphylococci. Preliminary experience in this hospital supports other writers who believe that furaltadone will prevent the emergence of resistant strains of staphylococci. Our figures show that, given without prior bacteriological isolation and sensitivity testing, penicillin may be effective in one-third of staphylococcal infections, and that the tetracyclines or streptomycin may be effective in two-thirds of staphylococcal infections.

We have not used furaltadone in acute fulminating staphylococcal septicæmia. These patients may die within a few hours of admission to hospital. Furaltadone given by the oral route probably would not produce therapeutic blood levels quickly enough to deal with these infections, and we would not use it except perhaps in addition to antibiotics given intravenously.

It would seem reasonable to propose furaltadone as an effective long-term treatment for chronic respiratory infections such as bronchitis and bronchiectasis, in view of the usual pathogens in these diseases (*H. influenzæ*, *Staph. aureus* and *S. pneumoniæ* — Dowling *et alii*, 1960), and the absence of untoward side effects in the continued use of this antibacterial drug.

Bacteriological sensitivity tests have shown furaltadone to be effective against staphylococci, streptococci, *H. influenzæ* and most strains of *E. coli*. It is ineffective against some Gram-negative bacilli, notably *P. pyocyanea* and most *Proteus* strains. In our experience sensitive organisms do not develop in-vivo resistance during treatment with this antibacterial drug.

Summary.

The results are presented of a clinical trial of oral treatment of 48 patients with furaltadone.

In vitro tests showed the drug to be effective against a wide range of bacteria, including the Gram-positive cocci and *E. coli* and *H. influenzæ*. It proved ineffective against *P. pyocyanea* and most *Proteus* strains.

Good results were obtained in respiratory and soft-tissue infections, and by its use as an antibacterial cover for operations.

This antibacterial drug appears to justify a wider trial for use in respiratory and soft-tissue infections and as a cover for surgical operations, even in the absence of facilities for isolation and sensitivity testing of the pathogen.

Acknowledgements.

We wish to thank the Chairman of the Repatriation Commission for permission to publish this report, and our colleagues at the Repatriation General Hospital, Springbank, South Australia, for cooperation in relation to cases under their care. We are indebted to Smith, Kline and French Laboratories (Aust.) Limited for making available a generous supply of furaltadone ("Altafur") tablets for this trial.

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Addendum.

Since we completed this trial, we have been informed of two side effects which our patients have not experienced. Both these side effects have occurred on high or prolonged dosage of furaltadone.

Diplopia is recorded in four cases (Lee, 1960), and one of these patients also had difficulty in swallowing and voice and personality changes, suggesting that the toxic changes were central rather than peripheral. These changes occurred after 7 to 14 weeks' continuous treatment with furaltadone in a dose (for adults) of 250 mg. four times a day. Lee refers to two other similar cases (Loftus *et alii*, 1960).

Lee suggests that treatment with furaltadone should not be continued for more than six weeks.

Auricular fibrillation has also been reported by Robinson (personal communication) in four patients who were receiving 500 mg. four times daily, which is double the usual dose. Rhythm reverted to normal on cessation of the drug.

Both these side effects have been noted on dosage levels which we have not experienced or found necessary.

McCabe *et alii* (1960) have recently reported their thorough clinical and laboratory studies of furaltadone. It was found clinically ineffective in 20 out of 28 patients with severe staphylococcal infection. Laboratory estimations of furaltadone in the blood of the patients were made, and very frequently the levels were below a bacteriostatic concentration. The disc method of sensitivity testing masked differences in the tube dilution sensitivity of up to 16 fold. Some resistance to furaltadone was readily induced in staphylococci *in vitro*. Toxic reactions occurred more often than in other trials.

Mast (1960) reported on a patient who had paresis of several cranial nerves after treatment with furaltadone for four weeks. The reaction was slowly reversed.

McCabe *et alii* (1960) conclude that their "results" permit no confidence in furaltadone as treatment for serious staphylococcal infections in the majority of patients". However, our results appear to justify continued trial of this drug.

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THE VENOMOUS SEA-URCHIN TOXOPNEUSTES PILEOLUS.

By R. ENDEAN, M.Sc., Ph.D.,

Department of Zoology, University of Queensland.

IN January, 1960, six specimens of *Toxopneustes pileolus* were found exposed at low tide on a mud flat in Moreton Bay, Queensland. Although hitherto unrecorded from Australian waters, the species has a wide distribution in the Indo-West Pacific region, and further reports of its occurrence in Australian waters, particularly in tropical areas, may be expected.

The species is noted for its possession of venomous pedicellariæ (seizing organs resembling small three-jawed pincers mounted on stalks), and is believed responsible for the deaths of several divers in Japanese waters (Fujiwara, 1935; Mortensen, 1943).

The hemispherical Moreton Bay specimens averaged 95 mm. in horizontal diameter. They possessed stout primary spines which averaged only 8 mm. in length. In four specimens all the spines were green, tipped with white. In the other two specimens patches of purple spines occurred. Open pedicellariæ resembling minute purple and white flowers were scattered amongst the spines. The jaws of the pedicellariæ were united by skin, and, when viewed from above, each pedicellaria had a circular outline. The open pedicellariæ averaged 3·5 mm. in diameter.

Each jaw of a pedicellaria terminates in a hook and possesses a venom gland. Two efferent ducts arise from each venom gland and open just below the hook. When the three jaws of a pedicellaria close, their terminal hooks may penetrate the object seized, and venom will be poured into the puncture as a result of contractions of muscles in the walls of the venom glands.

Fujiwara (1935) reported that when he picked up a specimen of *T. pileolus*, seven or eight pedicellariæ closed on the skin to the side of the middle finger of his right hand. He immediately experienced severe pain, difficulty in breathing, paralysis of the lips, tongue and eyelids and relaxation of limb muscles, and was scarcely able to speak or control his facial expression. The pain diminished in intensity after 15 minutes and disappeared after an hour. However, facial paralysis lasted six hours.

As pointed out by Fujiwara, the only regions of the body that can be stung are those where the epidermis is sufficiently thin to be penetrated by the minute hooks of the pedicellariæ, venom being thus allowed to reach blood capillaries.

The pedicellariæ are readily detached from their stalks, and obviously any still adhering to the skin of a victim should be carefully removed.

It would appear that the chances of a person's being stung by *T. pileolus* in Australian waters are remote, but the species is a potential hazard to shore collectors, and particularly to aqualung enthusiasts, the numbers of whom are rapidly increasing. In view of the reported paralytic effects of the venom, it is conceivable that death from drowning might follow a sting.

The nature of the venom is unknown.

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A SERUM FROM A GROUP O WOMAN CONTAINING AN AUTOAGGLUTININ TO PAPAINIZED CELLS, A "HIDDEN" ANTI-A ANTIBODY, AND A SALINE AGGLUTINATING ANTI-E (ANTI-rh") ANTIBODY.

By SENGA WHITTINGHAM, HERTA LOWY

AND

PATRICIA LIND,

The Red Cross Blood Transfusion Service (Victorian Division) and the Walter and Eliza Hall Institute of Medical Research, Melbourne.

AUTOAGGLUTININS which are active against papainized cells and independent of blood-group specificity are of relatively rare occurrence.

Stratton and Renton (1958) reported finding nine maternal sera showing autoagglutination with papainized cells, in a total of 1346 samples tested for antibodies by the papain slide test. Three of these autoagglutinins were active at 37° C.

During an investigation of sera for Rh antibodies by a technique developed by Pond (1960), an autoagglutinin to papainized cells, active at 37° C., was found in the serum of a pregnant woman whose blood was group O, Rh-positive. The serum was then subjected to further examination, which showed that, in addition to the autoagglutinin to papainized cells, the serum contained a "hidden" anti-A antibody, and a saline-agglutinating antibody of anti-E(rh") specificity. The present paper reports the results of these investigations.

Report of a Case.

Mrs. F., in her fortieth year, was pregnant for the sixth time. All previous pregnancies had been normal except her fourth, which had ended in stillbirth at 28 weeks. The only serious infectious disease in her history was diphtheria.

Mrs. F.'s sixth pregnancy was clinically uneventful, and at delivery she produced a healthy, full-term female child, with no clinical or laboratory evidence of erythroblastosis.

Mrs. F's blood was first examined in the fourth month of pregnancy. It was group O, Rh-positive, of type cDe(Rh_0) and probable genotype cDe/cde(R°r). Anti-A hæmolysins were present. Her serum strongly agglutinated all papainized cells, including her own. No agglutination was obtained when the serum was tested against trypsinized cells. The indirect Coombs tests gave a negative result when the serum was tested against antigens of the following systems: Rh, MNS, P, Le, Fy, K and Jk. A non-specific cold agglutinin with a titre of 20 was demonstrable at 4° C. The titres of both the anti-A and anti-B isoagglutinins were found to be 16 when doubling dilutions of serum with saline were set up against group A and group B cells suspended in saline. When a titration with the same serum dilutions was performed against pooled group O, Rh-positive, papainized cells at 37° C., the titre was 128.

When the serum was tested against papainized group O, Rh-positive cord cells, the titre was also 128. The titre was independent of the activator in the papainization procedure, whether cysteine hydrochloride or thioglycollic acid, and it was not influenced by complement. The agglutination was strongest at 37° C. The agglutinin was heat-stable when heated to 56° C. for 30 minutes, and storage at −20° C. for six months did not alter its activity.

When the autoagglutinin was absorbed from the serum by packed, papainized, group O, Rh-negative cells, the anti-A and anti-B isoagglutinin titres remained the same. However, when the T-agglutinin level was investigated by the use of human group O, Rh-negative cells treated with the influenza-virus-receptor-destroying enzyme (RDE) of *Vibrio choleræ* (Burnet, McCrea and Stone, 1946), it was found that the T-agglutinin titre had fallen in parallel with

that of the autoagglutinin. Complete absorption was not attained in spite of repeated attempts (Table I).

When the antibody was eluted from these papainized cells, its titre in saline against papainized cells was found to be 32.

The control used for this experiment comprised similar amounts of serum and the corresponding untreated group O, Rh-negative cells in contact at 37° C. for the same period. When this control mixture was examined, the titres of the agglutinins which were active against papainized cells,

TABLE I.

Titres for the T Agglutinin and Autoagglutinin Before and After Absorptions with Papainized Cells.

Mrs. F.'s Serum.	T-Agglutinin Titre.	Autoagglutinin Titre.
Before absorption ..	160	128
After absorption ..	10	2

RDE-treated (T) cells and group B cells were unaffected, but the anti-A isoagglutinin titre showed a marked rise from 32 to 256, shown in Table II.

From these results, it would appear that a hidden anti-A antibody had been unmasked.

The effect of mixing Mrs. F's serum with inactivated, group O serum (obtained from the same donor as the group O, Rh-negative cells used as in Table II) was

TABLE II.

Titres for Anti-A and Anti-B Isoagglutinins Before and After Absorptions with Papainized Cells and Untreated Cells.

Mrs. F.'s Serum.	Titre of Anti-A_1 Isoagglutinin at Room Temperature.	Titre of Anti-A_2 Isoagglutinin at Room Temperature.	Titre of Anti-B Isoagglutinin at Room Temperature.
Before absorption	16	32	8
After absorption with papainized cells	16	32	8
After absorption with untreated cells	256	256	8

investigated. The anti-A titre obtained was almost identical with the calculated titre (Table III).

Three months after delivery, the enhancement of the anti-A titre could no longer be demonstrated in Mrs. F's serum after contact with untreated, group O Rh-negative cells.

The T agglutinin titre of Mrs. F's serum was within normal limits. Absorption of her serum with T-transformed cells reduced the titre for the T agglutinin and also the agglutinin for papainized cells (Table IV).

The T agglutinin could not be completely removed, in spite of repeated attempts at absorption with T-transformed cells. The agglutinin to papainized cells was equally resistant to absorption.

In her 39th week of pregnancy, Mrs. F. developed an Rh saline agglutinin of anti-E(rh″) specificity. Its titre was four.

Mrs. F.'s baby's blood was group O, Rh-positive. The agglutinin to papainized cells was present in the cord blood serum, but only to a titre of four. The direct Coombs test gave a negative result.

Discussion.

Agglutination of human red cells by human sera is not always blood-group-specific. It may occur when the red cell is altered in such a way that it becomes agglutinable by all apparently normal group-compatible sera, its own included, or it may take place when serum develops an agglutinating property acting on all group-compatible cells, again its own included.

The question of agglutinability of red cells, apart from that due to blood group specificity, has been dealt with in this Journal by Hendry and Simmons (1955), who discussed fully the phenomena of panagglutination, poly-agglutination and autoagglutination. Briefly, panagglutination of red cells occurs as a manifestation of the Hübener-Thomsen-Friedenreich phenomenon (Hübener, 1925; Thomsen, 1927; Friedenreich, 1930), whereby a latent receptor, designated T, present on the red cells,

TABLE III.

Titres for Anti-A Isoagglutinins in Sera Before and After Mixing.

Sera Tested.	Anti-A Titre.
(*a*) Mrs. F.'s serum	16
(*b*) Inactivated group O serum	64
(*c*) Mixture (equal parts of (*a*) and (*b*))[1]	32

[1] In the mixture the expected titre would be $\frac{16+64}{2}=40$.

is transformed by the action of enzymes of certain bacteria and viruses, so that it reacts with the anti-T agglutinin present in all adult sera.

Sera may also develop agglutinating properties outside the specificity of blood groups and these properties may result from the presence of the so-called anti-h agglutinins, or autoagglutinins. Infection of a serum by bacteria may give rise to a panagglutinin which will

TABLE IV.

Titres for the T Agglutinin and Autoagglutinin Before and After Absorptions with T-transformed Cells.

Mrs. F.'s Serum.	T-Agglutinin Titre.	Autoagglutinin Titre.
Before absorption ..	160	128
After absorption[1] ..	10	16

[1] Serum was diluted 1 in 4 in normal saline and four absorptions with T-transformed cells were performed.

agglutinate all blood-group-compatible red cells, including its own. Davidsohn and Toharsky (1940) observed this phenomenon, which is quite distinct from the agglutination brought about by bacterial products acting on red cells. The panagglutinin was called anti-h by them, and is present only in serum which has been transformed by bacterial activity. It is never present in fresh serum or in serum to which becteriostatic agents have been added.

Wiener, Samwick, Morrison and Loewe (1952) in discussing autoantibodies, wrote as follows:

> Autoantibodies have the ability to react not only with the individual's own red cells but also with the red cells of all other human subjects.

These autoantibodies commonly occur as cold agglutinins of low titre, and show dispersal of agglutination when the upper limit of their temperature range is exceeded.

In acquired hæmolytic anæmia and virus pneumonia the titre is often raised, and autoagglutination may be evident at room temperature and at 37° C. In these diseases, human red cells undergo sensitization *in vivo*.

The statement by Wiener *et alii* quoted above implies that all autoantibodies are also panagglutinins. However, although the autoantibodies are usually non-specific and agglutinate all red cells, they may narrow their specificity into a particular blood-group category. An example is anti-e(hr″), which may at first sight appear to be a panagglutinin, because it reacts with the cells of that 98% of the population who possess the e(hr″) factor, as well as with the patient's own cells.

Autoagglutinins in serum may be active against enzyme-treated cells only. The autoagglutinin in Mrs. F.'s serum did not react with all enzyme-treated cells, for it was inactive against trypsinized cells. However, it reacted with all papainized cells, including her own, and was first observed when her serum was tested for Rh antibodies with papainized cells.

It was found by chance, during absorption studies, that a hidden anti-A antibody had been unmasked. After contact with group O, Rh-negative cells for one hour at 37° C., a marked rise occurred in the anti-A isoagglutinin titre of Mrs. F.'s serum, from 32 to 256.

Bird (1951) first demonstrated hidden anti-A and anti-B antibodies in the sera of healthy group A,B individuals. In investigating the possibility of cold agglutinins consisting of multiple specific components, he set about testing this assumption by absorbing, with group O cells in the cold, some sera containing cold agglutinins from healthy people of blood group A,B, and demonstrated a marked enhancement of the titre and thermal amplitude of anti-A and anti-B components.

The unmasking of a hitherto "concealed" antibody has also been described in the Rh system. Dunsford and Newstead (1954) showed that, when a group O serum containing anti-D(Rh_0) was absorbed with group A,B Rh-negative cells, or was in contact with O Rh-negative cells, a previously undetected anti-C(rh') antibody was revealed.

These have been cases in which antibodies have been enhanced and unmasked by contact with red cells. Some samples of normal human sera have also been shown to possess a property which produces this enhancing effect. Rossi (1958) found, when using fresh serum instead of saline as a diluent in titrations, that the titre of cold agglutinins rose slightly and that if the serum was inactivated first, the titre showed a striking rise. Heating at 56° C. for 30 minutes destroys the heat-labile fraction of complement which, as Rossi points out, is probably the inhibiting factor. The rise in anti-A titre in Mrs. F.'s serum was brought about by contact at 37° C. with group O, Rh-negative cells, and it was unrelated to the property of enhancement by inactivated serum described by Rossi.

The saline-agglutinating Rh antibody of specificity anti-E(rh″) was the result of isoimmunization during pregnancy. Mrs. F.'s red cells lacked the E(rh″) agglutinogen which was present on the red cells of the child.

Summary.

The presence of an autoagglutinin to papainized cells most active at 37° C. was demonstrated in the serum of a woman whose blood was group O, Rh-positive. This autoagglutinin was shown to behave in some respects similarly to the normal T agglutinin present in her serum. At the same time, absorption studies revealed the presence of a hidden high-titre anti-A isoagglutinin. Later, the presence of an Rh-agglutinating antibody of anti-E(rh″) specificity was also demonstrated.

A brief discussion is presented on each antibody found, and relevant literature is quoted.

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Reports of Cases.

GRANULOMA FROM SCABBY MOUTH VIRUS.

By W. H. KITCHEN, M.D., M.R.A.C.P.,
Acting Physician to Out-patients, Royal Children's Hospital, Melbourne,

IAN JACK, M.Sc.,
Sporting Globe-3DB Virus Research Laboratory, Royal Children's Hospital, Melbourne,

AND

C. J. R. GORRIE, B.V.Sc.,
Veterinary Research Institute, University of Melbourne.

SCABBY MOUTH is a dermotropic virus infection, occurring in sheep, in goats and occasionally in humans, and is variously known as orf, contagious pustular dermatitis or ecthyma contagiosum. In sheep the vesiculo-papular lesions are visible on the muzzle and other non-wool-bearing skin areas, whilst ulceration of the buccal mucous membrane may seriously interfere with the animal's nutrition. The disorder is of world-wide distribution in wool-producing countries (Wheeler and Cawley, 1956; Blank and Rake, 1955).

Aynaud (1923) first transmitted the disease to susceptible sheep and demonstrated their subsequent immunity to reinfection. Case reports of scabby mouth granuloma in sheep-shearers and veterinary surgeons are numerous, but in many papers the diagnosis is made largely on clinical grounds (Kewish, 1951; Peterkin, 1937; Muir, 1951). Other reports are well supported by animal inoculation experiments (Carne *et alii*, 1946; Hodgson-Jones, 1951; Kingery and Dahl, 1945; Lloyd *et alii*, 1951; Lyell and Miles, 1950; Nomland, 1940; Schoch, 1939; Wheeler, Cawley and Johnson, 1955).

Accidental and intentional infection of laboratory workers has been described (Blakemore *et alii*, 1948), but the studies of Pask, Mackerras, Sutherland and Simmons (1951) clearly show that experimental infection of man with orf is achieved with some difficulty and requires cutaneous trauma by scarification as well as the presence of the virus. Only one fatality has been attributed to scabby mouth in man, a poorly authenticated case of pyæmia occurring in a sheep-shearer with cutaneous lesion clinically suggestive of orf (Cooke, 1936).

A careful search of the literature has not revealed a case report of orf in childhood.

Clinical Record.

A female child was admitted to the Royal Children's Hospital, Melbourne, at the age of three years and two months with a granulomatous lesion on the left deltoid region. For the previous 16 days she had bottle-fed and kept in her house a pet lamb with lesions in the mouth and circumoral region. There was little doubt that the lamb had scabby mouth, for the disease was typical in the pet, and was also known to be present in the sheep

on the farm. Three weeks before the child's admission to hospital she had sustained a trivial burn in the left deltoid region, and 11 days before her admission the scab was accidentally dislodged. Three days later the traumatized burn site became erythematous, and in the course of the following eight days the lesion rapidly enlarged to a circular, slightly umbilicated, crusted lesion 3 cm. in diameter and raised 1 cm. from the surrounding erythematous skin (Figure I). Tender, large

FIGURE I.
The lesion of scabby mouth granuloma on the left deltoid region.

axillary nodes appeared four days before her admission to hospital and the child became anorexic and rapidly lost weight, and an intermittent rise in rectal temperature up to 39·4° C. was recorded.

After a biopsy of the lesion for virus studies and histological examination, the patient was given a five-day oral course of erythromycin (125 mg. every six hours) and crystalline penicillin by intramuscular injection (250,000 units every six hours). The fever subsided in 48 hours, and the granuloma rapidly regressed, to leave a small scar reminiscent of a smallpox vaccination.

A blood examination showed a hæmoglobin value of 12·5 grammes per 100 ml., and a white cell count of 19,250 per cubic millilitre, 77% being neutrophils, 19% lymphocytes and 2% eosinophils. *Staphylococcus aureus* was cultured from the surface of the lesion, and *in vitro* was sensitive to the antibiotics administered.

The microscopic appearance of the biopsy specimen (Figure II)[1] was reported on as follows by Dr. A. L. Williams:

> The specimen is a portion of skin in which gross inflammatory changes are present. The epidermis appears thin due to loss of the superficial layers and in some places ulceration has occurred. A thick layer of fibrinous exudate containing leucocytes, desquamated epithelial cells and nuclear debris is adherent to the remaining epidermis. Vacuoles of varying size are present within the cytoplasm of cells of all layers of the epidermis.
>
> The normal tissue of the dermis is replaced by a mass of fibroblastic tissue which is infiltrated by numerous lymphocytes and a moderate number of histiocytes. Occasional plasma cells and polymorphs are present. The tissue appears œdematous and contains numerous vascular channels, the majority of which are capillaries although several larger sinusoids containing blood are present.

The microscopic appearance is similar to that described by Wheeler and Cawley (1956) in man.

Virus Isolation.

A portion of the biopsy specimen taken nine days after the development of the lesion was ground with sterile alundum and suspended to approximately 10% in Hanks's saline containing penicillin and streptomycin. The suspension was clarified by low-speed centrifugation and then inoculated to several routine hosts, mainly to exclude vaccinia virus infection.

[1] For Figure II see art-paper supplement.

No lesions or changes were detected in suckling mice, in monkey kidney-cell cultures, or in the chorio-allantoic membrane of embryonated hen's egg or after intradermal inoculation in a rabbit.

The biopsy extract was then inoculated by light dermal scarification to the glabrous skin of the inner aspect of the thigh of a lamb, aged four weeks, known not to have had the natural disease or to have been in contact with it. An erythematous lesion developed over the entire length of the scarification at the fourth day. At this stage, a control scarification was just faintly visible as a fine line. The infected scarification increased in thickness over the next few days, and had become pustular by the eleventh day. At the end of three weeks it was a typical hard scab and was harvested.

The identification of the agent was made on the basis of the similarity of the lamb lesion with that produced by experimental infection with the standard vaccine strain of this virus.

Discussion.

This patient's illness conforms with the experimental pattern of infection in man, which requires substantial skin trauma (Pask *et alii*, 1951) as well as the presence of the appropriate virus.

As the keeping of pet lambs is widespread and skin trauma is common in country districts, there must be ample opportunity for orf to occur in childhood. In adults at least, constitutional symptoms are absent or minor and the patient recovers spontaneously. In the present case, the local lesion was large with pronounced axillary adenitis, and the child was so ill that hospital admission was necessary.

When she was first examined, the rapid growth and fungation of the lesion suggested a possible diagnosis of malignant disease, whilst the heavy growth of *Staph. aureus* prompted the tentative diagnosis of staphylococcal granuloma. However, the microscopic features and the animal inoculation experiments fully support the view that the lesion was a scabby mouth granuloma. Although chemotherapy was given to our patient with apparent improvement, there is little doubt that secondary infection was reduced but the underlying virus disease subsided spontaneously.

Carithers (1958) has stressed the wide variety of infections transmitted from pets to children, and this case report adds yet another example. Scabby mouth infection is common as an occupational hazard, and in rural districts must occasionally occur in children. If it is accepted that domestic animals constitute a potential health hazard, then the added danger provided by a sick animal should not be tolerated. The advice of Carithers that "when a child is taken to a doctor for examination, his pet should be taken to a veterinarian for a check up" is not yet practicable in Australia, despite the logic of such an approach.

Summary.

Human infection with orf, variously known as scabby mouth granuloma and ecthyma contagiosum, is briefly reviewed.

A granuloma occurring in a girl, aged three years, is described and the microscopic appearance and confirmation of the diagnosis by animal inoculation are discussed.

Acknowledgements.

We are indebted to Dr. W. H. Hardy, who originally drew our attention to the possible diagnosis, and to Dr. A. L. Williams, Director of the Pathology Department, Royal Children's Hospital, Melbourne, who supplied Figure II and described the microscopic features of the lesion.

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A CASE OF MULTIPLE MYELOMA.

By MICHAEL L. ARMSTRONG, M.B., B.S.,

St. George Hospital, Kogarah, New South Wales.

Clinical Record.

THE patient, an English woman, aged 59 years, first presented herself to the medical profession when her local doctor saw her in February, 1960. She was at that time complaining of a blocked nose and increasing deafness. In passing, she mentioned some pain in her back. She was diagnosed as suffering from allergic rhinitis, and nose drops were prescribed. The back pain responded well to infra-red therapy, and all was apparently well until about eight weeks later, when she complained of a "bearing-down" pain, and on examination was found to have a uterine prolapse. A repair was advised. During the pre-admission period—in fact, just one week prior to her admission to hospital—the patient sustained a fracture of her left clavicle whilst getting out of bed; she "twisted her neck and something happened". A week later she was admitted to hospital for her repair operation.

In hospital, routine interrogation revealed the following abnormalities. (*a*) She had lost over a stone in weight during the last twelve months, and had had anorexia for the latter three. (*b*) She had passed black motions twice in the week prior to her admission to hospital. The patient admitted that she had been taking "liver pills" for the past four years, but said that her motions had never been black. (*c*) Over the last few months she had become increasingly weak and lethargic, and she had noticed increasing weakness of her left leg. Routine systemic examination revealed the following abnormalities: (*a*) prolapsus uteri with cystocele and rectocele; (*b*) diminished power in the left leg and impairment of superficial touch sensation compared with the right leg; (*c*) apparent non-union of the fractured left clavicle. In view of her story of nasal blockage and her complaints of a sore throat, her naso-pharynx was examined, and on the left side was seen a large, hæmorrhagic fleshy tumour. An upper deep cervical gland on the left side was seen to be enlarged and fixed. No other positive findings were elicited, and a diagnosis of post-nasal carcinoma was made, with the possibility of a metastasis in the clavicle producing a pathological fracture. The gynæcological repair was deferred, and a consultation with the honorary ear, nose and throat surgeon requested.

At examination by the ear, nose and throat specialist, the patient was found to have a large, vascular, cauliflower-like tumour in her left post-nasal space which was infiltrating down the lateral pharyngeal wall behind the posterior faucial pillar. A provisional diagnosis of post-nasal carcinoma was made, and the patient was recommended for X-ray examination of the sinuses and the base of the skull (submento-vertical view) and a soft-tissue X-ray examination of the post-nasal space to help localize the growth and give some indication of its extent. A specimen from the tumour in the post-nasal space and from the lateral pharyngeal wall was taken for biopsy. In view of the apparent pathological fracture of the clavicle, X-ray examination of all bones was ordered.

While the results were being awaited from the pathologist, the skull X-ray films were taken, and the radiologist reported that numerous areas of translucency could be seen and were consistent with metastases from a post-nasal carcinoma. This was closely followed by the pathologist's report of myeloma on the post-nasal biopsy.

In retrospect, then, our patient turned out to be suffering from classical multiple myeloma—classical, that is, apart from her mode of presentation, for while solitary plasmocytoma in the upper respiratory passages is by no means unheard of, multiple myeloma with foci in the upper part of the respiratory tract is far less common.

A series of investigations was done, the results of which were as follows. X-ray examination showed myelomatous foci in the following sites: the skull (Figure I)[1]; both humeri (Figure II); the right radial tuberosity; the pubic arch and both ilia, with erosion of the wing of the sacrum; the proximal ends of both femora; the ribs, clavicle and scapulæ, with pathological fractures in the left clavicle and first rib. Collapse was evident in the fifth and sixth thoracic vertebræ, with porosis of the third lumbar vertebra. The test for occult blood gave a strongly positive result. Serum protein estimations gave the following figures (grammes per 100 ml.): total protein, 6·2; albumin, 3·8; globulin, 2·4; albumin-globulin ratio, 1·6:1·0. Bence-Jones protein was present on many successive days. A blood examination gave the following findings: the erythrocytes numbered 3,400,000 per cubic millimetre, the hæmoglobin value was 76% (10·5 grammes per 100 ml.) and the erythrocyte sedimentation rate was 28 mm. in one hour; the leucocytes numbered 5800 per cubic millimetre, 54% being neutrophils, 38% lymphocytes, 8% monocytes and 3% eosinophils; one early metamyelocyte was present. Rouleau formation was seen, but there were no primitive cells. The serum electrolyte contents were as follows: sodium, 130 mEq/l.; chloride, 98·1 mEq/l.; potassium, 4·1 mEq/l.; carbon dioxide combining power, 26·4 mEq/l.; phosphorus, 5·1 mg. per 100 ml. (inorganic phosphorus); calcium, 15·3 mg. per 100 ml.; alkaline phosphatase, 10·6 King-Armstrong units; uric acid, 6·3 mg. per 100 ml. Serum and urinary electrophoretograms showed little abnormality. Sternal puncture showed no abnormality, although two specimens were taken.

Solitary plasmocytomas in the upper part of the respiratory tract have been reported as disappearing after radiotherapy, and certainly several "cures" have been reported after surgical excision. Therapeutically speaking, the problem of multiple myeloma is a much more difficult one, and at the present time there is no effective treatment. Cortisone and ACTH proved unhelpful in 16 of a series of 57 cases reported by Kenny and Moloney (1957). In two others, intense local X-ray therapy to sites of pathological fracture resulted in relief of pain and healing of the fracture. It is generally accepted that urethane is

[1] For Figures I and II see art-paper supplement.

the drug of choice, although it does not appear to have any effect on survival time. Its major, if not sole, beneficial effect is on multiple myeloma patients with severe bone pain; in these cases the pain is often alleviated. In view of these facts, and also since the present patient had no skeletal pain whatsoever, it was decided not to use urethane, and "Endoxan" in a dose of 2 grammes given intravenously was tried. This did not at first prove very successful, because not only did the patient show no symptomatic relief, but two days after the commencement of therapy she developed severe pain in her back and shoulders. A spinal support was recommended for the relief of pain. Five days later, a further 2 grammes of "Endoxan" were given intravenously, and after a further two days there was a considerable clinical improvement. The patient looked and felt better, the pain in her clavicle and back was gone and the nasal intonation in her voice was greatly diminished. The post-nasal tumour had noticeably decreased in size. Repeated blood counts indicated a progressive fall in the number of leucocytes. Eleven days after the initial use of "Endoxan", her white cell count was 350 per cubic millimetre. The patient was barrier-nursed and given penicillin and streptomymin together with cortisone prophylactically. Although at one stage the hæmatologists reported a white cell count of zero, her blood picture soon improved and gradually returned to normal.

The patient continued to improve, and, apart from alopecia, said that she had "never felt better". Progress examination by the ear, nose and throat specialist indicated that the infiltration of her left pharyngeal wall had completely regressed, and no definite tumour mass could be felt in the post-nasal space. The previously enlarged lymph gland on the left side of her neck was also no longer palpable. A biopsy specimen of the pharynx was taken, and occasional small areas of tumour cells were still present. Some of the cells exhibited degenerative changes, but for the most part they appeared viable.

The patient was soon up and about. Exactly one month after the initial dose of "Endoxan", two further doses of 2 grammes were given on alternate days, so that a total of 8 grammes of "Endoxan" had been given to this patient over a period of one month. Her subsequent hospital stay was uneventful, apart from a small abscess over her mandible which cleared in a few days. When she was discharged from hospital just three months after her admission, the patient was walking about freely with no pain whatsoever There was still a small, firm, post-nasal tumour, but this was considerably smaller than it had been initially, and the infiltration of the lateral pharyngeal wall had completely disappeared

Discussion.

This case presents some interesting features. As was stated above, solitary plasmocytoma in the upper respiratory passages is not unheard of. About 175 cases had been reported throughout the world up till 1953, since Childe's original report in 1908, although about 50 of these were later discounted because of insufficient documentation. Multiple myeloma, on the other hand, is far less common in these sites, and carries with it a much different prognosis from the solitary form, although solitary plasmocytoma, when it does occur, is considered by many to be merely a stage in the evolution of multiple foci.

Apart from the unusual site and mode of presentation in this case, it is also interesting to consider the cause of the melæna and the occult blood in the fæces. Bowel involvement in myelomatosis is uncommon, but is well recognized, and the assumption is made that in this case it is such myelomatous foci which have given rise to gastro-intestinal bleeding.

In a series of 57 cases of multiple myeloma, Kenny and Moloney (1957) found that the median survival time was only 17 months in adequately treated cases, the treatment having no effect on life span. On the other hand, patients with the so-called solitary plasmocytoma are well known to have survived for many years with suitable treatment.

Insufficient time has elapsed to assess the ultimate prognosis in this case, but there is no reason to presume that this will be altered in any way by "Endoxan", in spite of the gratifying subjective and clinical response.

Summary.

A case of multiple myeloma has been described with some unusual features, and with an extremely good response to "Endoxan".

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AUTOIMMUNE THYROIDITIS AND HEPATITIS IN A PATIENT WITH GASTRIC ULCER.

By A. KUCERS, M.B., B.S.,
The Royal Melbourne Hospital, Melbourne.

THERE is considerable clinical and experimental evidence suggesting that chronic lymphadenoid or Hashimoto's thyroiditis is an autoimmune disease (Roitt and Doniach, 1958). It is less certain, but possible, that some forms of chronic hepatitis may also belong to the wide spectrum of autoimmune phenomena (Mackay *et alii*, 1959). It is therefore of interest to record a case of coexisting thyroiditis and chronic hepatitis.

Clinical Record.

An active Scottish woman, aged 60 years, was admitted to the Royal Melbourne Hospital in October, 1958. For six months she had noticed increasing tiredness, weakness and pallor, for two months increasing dyspnœa on exertion, and for three weeks swelling of the legs. There was no history of indigestion, alcoholism or dietary deficiency. Her past history and family history were not relevant, and in particular she had never suffered from acute hepatitis. She was pale and showed signs of congestive cardiac failure, with a raised jugular venous pressure of 8 cm., moderate cardiac enlargement, pulmonary congestion and œdema of the legs. She had a moderate enlargement of the thyroid gland, with a hard nodular goitre. Her liver was firm, smooth and slightly tender, and was palpable 8 cm. below the right costal margin. The spleen was palpated 4 cm. below the left costal margin. There was no ascites, and no lymph-node enlargement.

A number of investigations were undertaken. The hæmoglobin value was 7·2 grammes per 100 ml.; the leucocytes numbered 10,000 per cubic millimetre; 4% of the erythrocytes were reticulocytes, and the blood film suggested anæmia due to chronic blood loss. The serum bilirubin content was 0·5 mg. per 100 ml.; the total serum protein content was 8·4 grammes per 100 ml. (albumin 3·0, globulin 5·4, gamma globulin 4·0). The serum alkaline phosphatase content was 12 K.-A. units, and the result of the cephalin flocculation test was positive (+++). The prothrombin index was 64% of normal. The L.E. cell test produced negative results on three occasions. The serum oxalacetic glutamic transaminase level was 48 units. The fæces contained occult blood. An X-ray film of the chest revealed a moderately enlarged heart and some pulmonary congestion. A barium-meal X-ray examination revealed a large shallow ulcer high up on the lesser curvature of the stomach. No œsophageal varices were seen. A barium-enema X-ray examination

revealed no abnormality. Biopsy studies gave the following information. In the liver the normal architecture had been lost and replaced by regeneration nodules interspersed with broad bands of fibrous tissue, which were densely infiltrated with histiocytes, plasma cells and lymphocytes. There was no fatty infiltration. The appearances were those of active chronic hepatitis. In the thyroid gland the changes were typical of Hashimoto's thyroiditis. There was dense infiltration with lymphocytes and plasma cells arranged as widespread focal collections. Thyroid acini were small and contained little colloid. In areas Hurthle cell changes were to be seen in the thyroid epithelium. Radioactive iodine uptake tests gave results well within the normal range. The serum autoimmune complement fixation test (A.I.C.F.), which measures antibodies to mixed tissue antigens, gave a negative result. The complement fixation titre (with toxic thyroid antigen) was 512. The tanned red cell hæmagglutination (T.R.C.H.) test (MacKay and Stuart, 1960) with thyroid extract as antigen gave a titre of 960.

The congestive cardiac failure and anæmia were corrected by diuretics and blood transfusion. The patient was started on thyroid therapy (60 mg. per day) and cortisone acetate (50 mg. per day), and has been maintained on both drugs since. Subsequently she has remained well, and there has been no recurrence of her anæmia or heart failure. In February, 1960, she was readmitted to hospital for review. Clinical examination revealed no new abnormality. The hard, smooth liver could still be felt 6 cm. below the right costal margin. The hæmoglobin value was 13·1 grammes per 100 ml., the leucocytes numbered 12,000 per cubic millimetre and the prothrombin index was 52% of normal. The serum bilirubin level was 0·6 mg. per 100 ml., the serum alkaline phosphatase level was 12 K.-A. units, and the total serum protein content was 8·9 grammes per 100 ml. (albumin 3·5, globulin 5·4, gamma globulin 3·1). The result of the cephalin flocculation test was still positive (+++). The liver biopsy was repeated on this occasion, and the appearances were still those of chronic active hepatitis. The inflammatory infiltration was less than in the previous biopsy, but the difference may have been due to sampling variation. The patient was discharged from hospital again on the same therapy of thyroid and cortisone.

Discussion.

This coexistence of chronic thyroiditis and hepatitis has been reported before (Luxton and Cooke, 1956; Roitt, Doniach and Hudson, 1959). Also it is known that Hashimoto's disease does occur in association with other diseases of probable autoimmune ætiology, such as Paget's disease, Sjögren's syndrome, disseminated lupus erythematosus, nephrosis and hæmolytic anæmia. The literature concerning these associations is reviewed by Doniach, Roitt and Hudson (1959).

It is clear that this patient has typical autoimmune thyroiditis as understood by present-day concepts. Thus the histological picture was characteristic, the gamma-globulin content of the serum was raised, and circulating antibodies were demonstrated which reacted specifically with extracts of thyroid gland. The complement fixation titre of the serum with toxic thyroid antigen was 512, and the T.R.C.H. titre with thyroid extract as antigen was 960. Both these results were regarded as strongly positive (Mackay and Perry, 1960). Similarly this patient's hepatitis was thought to be of autoimmune ætiology, although the evidence here is less complete, as there is no serological basis to support this. However there were no other known ætiological factors for her liver disease, such as a history of dietary deficiency, alcoholism or infectious hepatitis. But clearly the main reason for regarding her hepatitis as being autoimmune in type is the fact that here we have chronic active hepatitis in a patient who also has classical Hashimoto's thyroiditis, the autoimmune ætiology of which is most probable. This is the main feature of this case.

Thus our patient demonstrates multisystem involvement, and it can be further argued that her two diseases arose from general disturbance of immunological homœostasis.

This patient also had a gastric ulcer, and initially presented with anæmia due to chronic blood loss from her ulcer. Since she has been taking cortisone her anæmia has not recurred, nor have there been any other symptoms. MacKay has reported a case of primary biliary cirrhosis and nephritis in which suction biopsy of the stomach revealed severe chronic atrophic gastritis with invasion of the mucosa with lymphoid aggregates, and it was suggested that immunopathy might be concerned in the pathogenesis of the hepatic, renal and gastric lesions. A similar process may well be occurring in the present case, with ulceration representing a further development of the gastric lesion.

Summary.

A case of coexisting Hashimoto's thyroiditis, chronic active hepatitis and gastric ulceration is presented.

It is considered that an autoimmune ætiology of the thyroiditis is definite and that a similar cause of the hepatitis is probable.

This patient shows multisystem involvement, and so lends support to the view that there must be some fundamental abnormality in the homœostatic control of her immunological mechanisms.

Finally, the possibility that the gastric ulceration may also be an autoimmune disease is briefly discussed.

Acknowledgements.

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ALTERNATING ADDICTION TO ALCOHOL, CARBROMAL AND OTHER DRUGS.

By I. PIERCE JAMES, M.A., M.B., D.P.M.,
Psychiatrist, Heathcote Hospital, Perth, W.A.

SPORADIC reports (Stroh, 1955; Seager and Foster, 1958; Steel and Johnstone, 1959, *et alii*) of cases of carbromal addiction have appeared in the medical journals over the last few years. However, there is reason to believe that habituation, and even addiction, to carbromal and other "mild" sedatives is much more prevalent than the frequency of such reports implies (Glatt, 1959; James, 1960).

The following example is presented, not because of the rarity of such cases (they are all too common), but because the patient illustrates graphically a number of features common to many, but insufficiently stressed in reports. First, true addiction to carbromal (with psychological and physiological dependence leading to gross withdrawal symptoms, increasing dosage, antisocial behaviour to satisfy craving, etc.) may occur; secondly, a neurotic personality disorder precedes drug taking; and finally, alternation may take place between various drugs and alcohol, so that if supplies of one are stopped, the patient resorts to another.

Clinical Record.

A woman, aged 40 years, was readmitted to Heathcote Hospital only a month after her previous discharge, in

a state of carbromal intoxication. She was drowsy, ataxic and dysarthric, and had a skin rash on her face and limbs. She admitted having taken up to six "Relaxa-Tabs" per night, but vehemently denied that it could have been more. However, her husband estimated that she had taken no less than two packets (that is, 60 tablets containing altogether 180 grains of carbromal and 120 grains of bromvaletone) per day for three weeks. As she had been in hospital (and almost certainly deprived of bromide preparations) for nine weeks until a month previously, her husband's estimate seemed likely to be accurate, since her serum bromide level on her admission had reached 159 mg. per 100 ml. The patient's father, who died of heart disease, had once spent some months in hospital with a diagnosis of "alcoholism", but was said to have improved considerably subsequently. Her mother was described as a morose, domineering woman with a "mild persecution complex". She had taken "Relaxa-Tabs" nightly for some years prior to her death in 1958. One brother was said to be an unstable person and a heavy drinker.

An unhappy, "highly-strung" child, in a home dominated by parental disharmony, the patient had been "rather below average" at school. She married at the age of 22 years, and had an adopted daughter, aged 14 years, at the time of her admission to hospital. Her husband, a warrant officer in the armed forces, described her previous personality as highly-strung, stubborn and demanding, and said that she was inclined to be neat and meticulous with tasks. She was occasionally theatrical, and tried to get her own way by displays of emotion. In the early years of marriage she had developed various neurotic symptoms, and had left her husband to return home for some months on one occasion. She had always been prone to "taking tablets" (for example, vitamins, cold-cures, antacids, etc.), and on one occasion in her late teens, had taken an "overdose of tablets" after an unhappy love affair. In 1950 (when she was 30 years old), she joined her husband at an isolated service camp, where fairly heavy social drinking was common. Within a few months she was drinking so heavily that her husband was sometimes called to collect her from the local hotel during the afternoons. This state of affairs continued spasmodically until her husband was reposted in 1953, and the couple went to live with the patient's parents. Here she stopped drinking, but later began taking carbromal tablets. At the time her husband was unaware of the extent of this, and was at a loss to explain her occasional episodes of ataxia and slurred speech. In 1956 the family moved to Queensland. Here she found that she could not buy carbromal without a prescription, but soon induced her mother to send her six packets of "Relaxa-tabs" each week by post. When her husband intercepted the parcels, she began drinking heavily, and would alternate between alcohol, carbromal (when she could get it) and very large quantities of A.P.C., codeine tablets, etc. In 1957 she returned to Western Australia, and not long afterwards joined "Alcoholics Anonymous". Subsequently she took little alcohol, but, as she put it, "I gave up drink and took to tablets". Since that time she had been admitted to hospital in states of coma or drug intoxication on six occasions. Her social habits had deteriorated, and she had spent much of her time at home in bed. Her husband often returned home to find her semi-comatose. He had asked all the local pharmacists not to supply her with carbromal or analgesic tablets, but she would travel to distant suburbs to obtain supplies. On her return she would hide them, at first in the toes of shoes, or at the back of drawers, but as her husband became more adept at searching he would find them poked beneath face-powder in her powder-bowl, buried in the garden or pinned to the underwear she was wearing. Carbromal was her first choice, but if she could not obtain any, she would take "packets of A.P.C. or codeine tablets" until she became befuddled and inactive. At one time a doctor had prescribed barbiturates for her "nervousness", and she was soon taking large quantities until her dependence was recognized and the prescriptions were withdrawn; at another she took "No-doz" (caffeine and aspirin) tablets in an attempt to conceal the drug-induced drowsiness from her husband, but she did not appear to have become habituated to the latter (or to any other "stimulant" drug) in any way.

During the week following her admission to hospital, the patient developed a severe withdrawal state with agitation, gross tremor, insomnia, retching, multiple somatic pains and episodes of tachycardia, sweating and panic, during which she would plead for further sedation. On the day of her admission, the serum bromide level was 159 mg. per 100 ml. (20 mEq/l.); the serum chloride level was 103 mEq/l.; the urinary bromide test (Reye and Joffe, 1959) gave a negative result and the urinary chloride level was 24 mEq/l. Four days later, the serum bromide level had fallen to 138 mg. per 100 ml. (17 mEq/l.); the serum chloride level had fallen to 99 mEq/l.; the urinary bromide test gave a positive result and the urinary chloride level had risen to 31 mEq/l. A Rorschach test produced an "anxiety hysteria" profile and the Maudsley Personality Inventory resulted in an extraverted neurotic score. A Wechsler test performed shortly after her admission to hospital gave a full scale intelligence quotient of 76 (verbal scale 82, performance scale 79), and when repeated three weeks later, a full scale I.Q. of 79 (verbal 84, performance 75); "deterioration" was 26%.

Comment.

This case illustrates the severity of addiction to carbromal which may occur and its rather grim prognosis in practice. Although this patient had been admitted to hospital on no fewer than six occasions in the space of two years, she relapsed within a week of her discharge from hospital, in spite of her husband's active measures to control her access to drugs. In the writer's experience, this pattern of neurotic personality development followed by dependence on and later addiction to alcohol and/or sedatives, with the alternation of the particular agent if supplies are restricted, is common in such cases, and the basic personality dependence is of primary importance. Therapy, which may be effective in the earlier stages, becomes progressively more difficult as the addictive process develops, and the dangers of the habit process should be borne in mind whenever one is treating the neurotic patient. Restriction of drugs is often merely belated expediency and may achieve no more than substitutive addiction to some other more easily obtained agent. This may happen in alcoholism (Glatt, 1959), so that the alcoholic who "gives up drink" may take large quantities (undisclosed to, or with the unwitting compliance of the doctor who is following him up) of sedatives. A serum bromide estimation in the "reformed alcoholic" sometimes discloses substitutive habituation to carbromal. One alcoholic patient in hospital, in whom this turned out to be so, described how, on an afternoon out from hospital, he stood in front of an hotel adjacent to a pharmacy and debated for some time which he would enter. Eventually he went into the pharmacy and bought carbromal, as he realized that it would be less apparent on his return to hospital.

The urinary test for bromide, described by Reye and Joffe (1959), is a useful screening test for bromide (and thus carbromal) intoxication, and when one has had some experience in interpreting weakly positive results, will give a positive result when the serum bromide level is above 50 mg. per 100 ml. The case described above was the first instance, in the writer's experience, in which a negative result was obtained from the test when the serum bromide level was as high as 160 mg. per 100 ml., and this may have been the result of renal disturbance (as shown by low chloride excretion) caused by the patient's malnutrition and possible dehydration. It gave a strongly positive result four days later, when the serum bromide level was 138 mg. per 100 ml.

Acknowledgements.

Dr. David Curnow kindly carried out the serum estimations at The Royal Perth Hospital and was responsible for elucidating the possible reasons for a negative

result from the urine test. Mr. Ellis Brown and Dr. A. Richardson are thanked for their psychological studies.

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IDIOPATHIC MEGACOLON TREATED BY HYPNOSIS.

By JOHN WOODLEY, F.F.A.R.C.S., F.F.A.R.A.C.S., D.A.,[1]

Director of Anæsthesia, Preston and Northcote Community Hospital, Victoria.

Clinical Record.

ON November 25, 1958, a boy, aged 12 years, was admitted to the Launceston General Hospital under the care of Mr. D. I. Roberts, for the investigation and treatment of megacolon. The patient had had no previous illness of note apart from tonsillectomy, and he had had his appendix removed when he was four years old. At home two weeks after the appendicectomy in 1950, his mother noticed that his abdomen was distended. His bowel troubles seemed to date from that time. In 1958 he was having pains in the abdomen, moving about across the umbilicus, mostly before wanting to empty his bowels, but not connected with constipation, as he was emptying his bowels daily and his stools seemed to be normal in appearance. However, still more distressing was the fact that the boy could not control his motions completely and was forever soiling his bed sheets and underpants. This, combined with the abdominal pains, at last drove the mother to seek medical advice for her child. The attacks of pain were becoming more and more frequent, and cleanliness was a great problem.

On his admission to hospital, the patient's history was that his appetite was fair, he usually had plenty of energy, there were no urinary symptoms, and coughs and colds were infrequent. He was a thin, healthy, intelligent-looking boy, weighing 4 st. 9·5 lb. I noticed from his daily chart that he had no bowel action from November 25 (the day of his admission to hospital) to November 30, inclusive, but thereafter he emptied his bowels daily.

On November 28, as he was free from abdominal pain, he had a barium enema X-ray examination (Dr. C. Craig), the report on which read as follows:

> There was very striking distension of the rectum and distal colon. The patient was too distressed when these portions were filled and the examination was ceased. The gas shadows show the rest of the bowel well, and it seems that the distension was mainly limited to the areas named. No area of narrowing was seen. After evacuation the bowel emptied completely.

The appearances are shown in Figures I and II.

On December 1 the patient had no pain, his hæmoglobin value and blood film findings were normal, and he did not react to the Mantoux test. On December 3 Mr. Roberts performed a sigmoidoscopic examination and confirmed the presence of megacolon. He reported "a large cavernous rectum" and ordered daily saline rectal washouts.

Because no surgery was indicated in this case, I offered to treat the boy by hypnosis, to endeavour to restore good bowel habits and to eliminate the fæcal soiling and the abdominal pains. Mr. Roberts fully agreed and handed the case over to me.

[1] Formerly Director of Anæsthesia, Launceston General Hospital.

Having obtained written consent from the boy's mother, I induced hypnosis on December 4, finding that the patient was a satisfactory subject. The induction was by the hand levitation method and occupied probably 10 minutes; but I spent another 30 minutes deepening hypnosis and training the subject to go into a trance on a signal.

On December 5 I again hypnotized the boy and was able to produce analgesia of the skin, and demonstrated that he was able to open his eyes and yet still remain in a deep trance, so I commenced repeating prepared suggestions, as follows:

1. Every day your bowels will move immediately after you have had your breakfast.

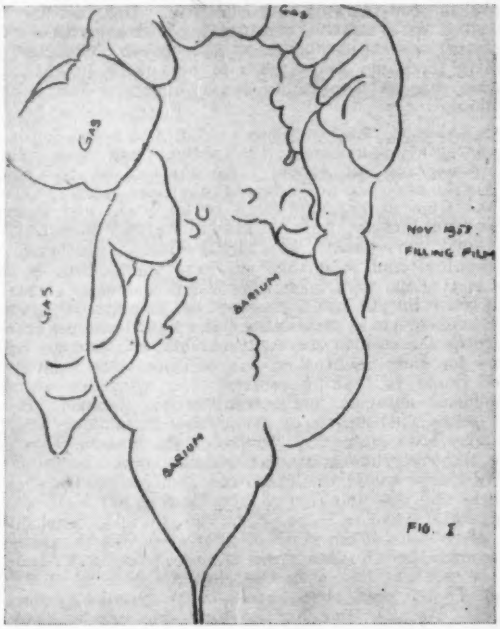

FIGURE I.

2. Your bowel movements will follow some rumblings in the tummy which will not worry you. You will have no pain bad enough to cause concern.

3. You will find that immediately after breakfast the urge to visit the toilet will be quite irresistible — you must go — nevertheless you will control yourself without difficulty so that your pants are never soiled.

4. Every day you will feel better and better; your appetite will be good and you will feel well and happy.

5. The daily movement of your bowels will rapidly become a normal habit which will remain with you all your life. Your bowels will always empty well so that your control will be easy, and you will rarely, if ever, soil your pants or your bed.

These suggestions were repeated several times at each session and, although the wording was varied a little, the form was never changed. I always gave suggestions of well-being before awakening the patient, and took the precaution of suggesting that only I could hypnotize him by my private signal.

This formula was repeated daily on December 5, 6, 8, 9, 10, 11 and 12, and on December 15 after a brief session I sent him home, to report after seven days. On December 22 the patient attended, reporting that his bowel actions were regular each day after breakfast as suggested; he had no pain; he never soiled his pants or bed; in addition, he felt better than he had been for years, and his appetite was very good.

ILLUSTRATION TO THE ARTICLE BY G. W. MILTON.

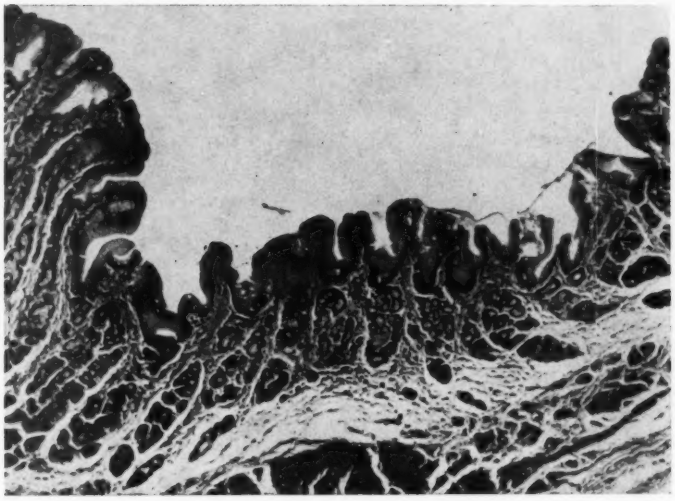

FIGURE II.

Showing the line of a healed anastomosis (three months), the original incision having been made with the coagulation current of the diathermy. Note the differentiation of the cellular elements.

ILLUSTRATIONS TO THE ARTICLE BY IAN HAMILTON.

FIGURE I.
Barium meal, early.

FIGURE II.
Barium meal in plicated loops.

FIGURE III.
Barium meal in colon.

ILLUSTRATION TO THE ARTICLE BY W. H. KITCHEN, IAN JACK AND C. J. R. GORRIE.

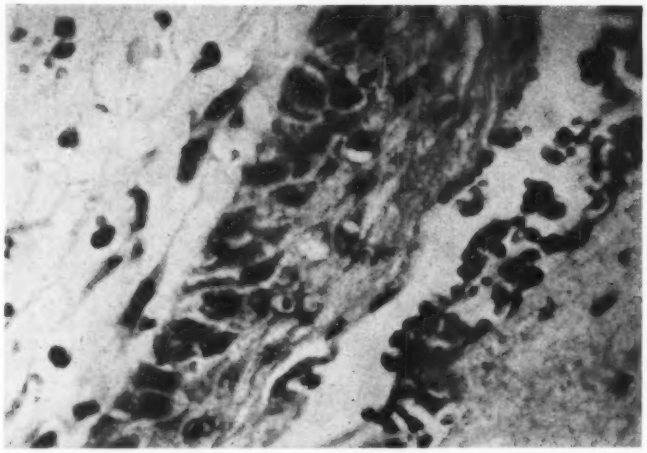

FIGURE II.
Photomicrograph of biopsy specimen of scabby mouth granuloma. (Hæmatoxylin and eosin stain, × 370.)

ILLUSTRATIONS TO THE ARTICLE BY MICHAEL L. ARMSTRONG.

FIGURE I.
Showing myelomatous foci in the vault of the cranium. The post-nasal tumour can be seen as an increased opacity on the left side.

FIGURE II.
Myelomatous foci in humerus.

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When I discharged the boy in December, 1958, I decided to be cautious and gave him the following mixture: neostigmine bromide, 10 mg.; petrol emulsion, 4 ml.; magnesium sulphate, 2 grammes; water to 8 ml. This mixture was as originally prescribed by Mr. Roberts, and the patient was to take 8 ml. twice a day. He was gradually weaned from this mixture as follows. On March 16, 1959, the neostigmine was omitted and a colouring dye was added. On April 13 I reduced the magnesium sulphate to 1 gramme. On June 29 I omitted the magnesium sulphate. On September 28 I altered the dose to 8 ml. *nocte*. The medicine remaining, a mere placebo containing 4 ml. of petrol emulsion in coloured water, was finally discontinued in May, 1960.

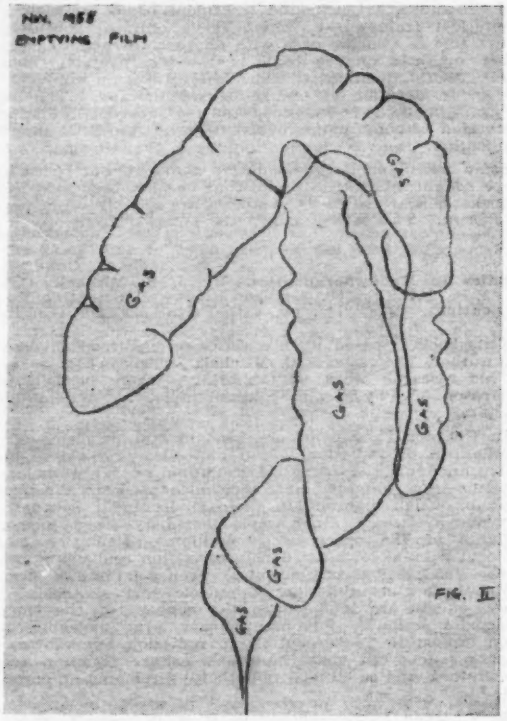

FIGURE II.

At intervals during the 18 months the patient had been to see me. In February, 1959, his functioning was excellent, with no relapse. In March the report was just as good. In June, 1959, his bowel habits were still excellent, and Mr. Roberts performed a sigmoidoscopic examination, noting that there was no change in appearance and that the bowel was still voluminous, the mucosa not being visible because of the degree of distension.

In July, 1959, the patient made a special appointment, as he wished to visit Queensland for two months' holiday, and he had soiled his pants slightly twice during the week before, in the evenings. I at once hypnotized him and reinforced all the suggestions, adding that the medicine was becoming less and less important as the weeks went by. I could find no reason for his soiling — the first since December, 1958 — and could only surmise the cause as a possible transient enteritis, or perhaps even excitement at the prospect of this long holiday in Queensland with a favourite uncle.

In September, 1959, the report was entirely satisfactory, with no further soiling. In December, 1959, there was no relapse and the patient was deeply hypnotizable on the signal. In March, 1960, the patient's habits were satisfactory, almost unbelievably so. In June, 1960, I saw him again, his report still being excellent. This time Mr. Roberts passed a sigmoidoscope up to 10 cm, and was able to view healthy bowel wall for the first time. On all previous occasions sigmoidoscopy had revealed an enormous cavernous rectum in which the bowel mucosa was lost in obscurity.

It was now eighteen months since the first barium enema X-ray examination, so we arranged for another to be made, on June 6, 1960, and I present Figures III and IV to illustrate the changes. It will be recalled that in December, 1958, the rectum and distal part of the colon were grossly distended, the rectum and sigmoid with

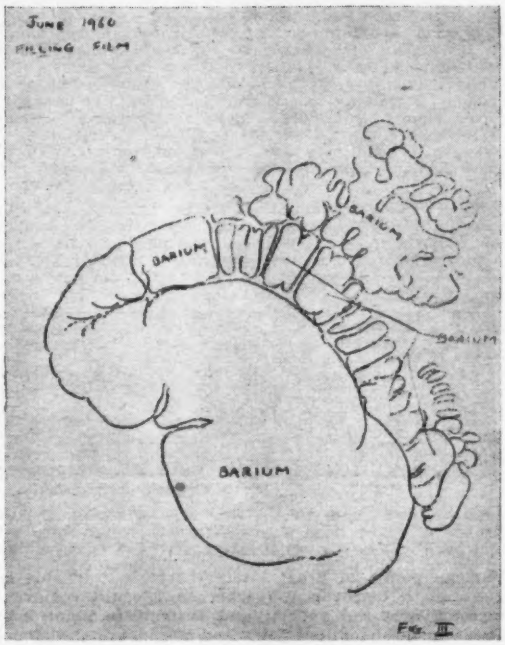

FIGURE III.

barium, and the higher colon with gas. In our recent enema there was still gross distension of the rectum and sigmoid, but the remaining bowel appeared quite normal. The emptying film was dramatic, as after twenty minutes of evacuation the patient was radiologically examined and the radiologist said that the colon and rectum were reasonably empty. However, there was still a bulk of barium in the rectum, so I rapidly suggested to the patient under hypnosis that he would have an irresistible desire to empty his bowels again immediately on being awakened. This worked like a charm, and we took the final picture, which is reproduced as a tracing (Figure IV). There is the report of the radiologist, Dr. R. E. Grant:

> The large bowel filled readily, as far as the mid-transverse colon, at which stage the barium supply was used up, without any discomfort to the patient, which contrasts to the situation in 1958, when the patient objected vigorously during even the early stages of filling. The rectum and distal half of the sigmoid colon were very ballooned, but not quite as ballooned as in 1958, and there were well-marked haustrations present throughout its length. The proximal portion of the sigmoid colon was slightly dilated, and the rest of the bowel was of relatively normal calibre, as far as filling occurred. Gas shadows in the ascending colon showed probably normal contour. In 1958 the entire large bowel was seen to be very ballooned, particularly

the ascending colon and the sigmoid colon, and the haustrations, although present, were almost obliterated by the degree of distension. At present, the haustrations were present moderately in the distal sigmoid and very markedly in the proximal sigmoid, and relatively normally in the rest of the large bowel. Evacuation was virtually complete in the present examination, and the large distal sigmoid colon and reservoir were seen to empty very well.

FIGURE IV.

Discussion.

Various points of great interest arise out of this case. I set out to discover (*a*) whether I could remove the symptoms of fæcal soiling and incomplete emptying on defæcation, of abdominal pains and of abdominal distension, by means of suitable suggestions under hypnosis, and (*b*) if after a lapse of time the distended atonic bowel would revert to normal. The symptoms under (*a*) appear to have been cured completely. As to the symptoms under (*b*), after eighteen months most of the distended large bowel appeared to have become normal, and whereas the rectum was still very capacious and freely distensible, yet it had such good muscle tone that it could empty completely.

Acknowledgements.

I wish to thank Mr. D. I. Roberts and the radiologists, Dr. C. Craig and Dr. R. E. Grant, for their cooperation, the Board of the Launceston General Hospital for giving permission to publish this case, and Mr. A. Markovitch for photographing the X-ray plates.

Reviews.

The Out-Patient Treatment of Schizophrenia: A Symposium. Edited by Sam C. Scher and Howard R. Davis; 1960. New York and London: Grune and Stratton, Inc. 9″ x 5¾″, pp. 256. Price: $5.75.

THIS text is an edited version of a four-day symposium "designed to provide consideration for areas of etiology, engagement and handling of crises, patient selection and treatment goals, treatment processes, the patient and the community and research". The participants were 13 psychiatrists, two clinical psychologists, two social workers and a lawyer turned psychoanalyst. Funds were provided by the United States Public Health Service.

The conference was designed to highlight approaches to the out-patient treatment of schizophrenics, and it is therefore unfortunate that so much time was taken up with general theoretical discussions on such matters as concepts, ætiology and research. It is also unfortunate that practical experience of this topic is limited in the U.S.A. by poorly developed community psychiatry, a concentration on individual as opposed to social aspects of psychiatry, and the pervasive in-patient orientation of the enormous State mental hospitals.

In the few chapters focusing directly on the treatment of the out-patient schizophrenic, drugs receive scant recognition, and undue emphasis, to our mind, is given to psychoanalytical treatment. Psychiatrists, such as Sandor Rado and Silvano Arieti, expound treatment based on their own theoretical frameworks, which serve only to confuse the issue; this is also the case with another therapeutic regime, which operates on the basis of the controversial "double-bind" theory of ætiology. The latter is again conjured up for a consideration of family-focused therapy. The paper on group methods is too broad and too superficial. Similarly, discussion of community involvement has too little practical application.

Some useful points come out in the text, but these have to be sought, and little is said that has not been said before elsewhere. Far too many symposia are latterly being rushed into print. This is not one of the successful ones.

Studies in Radiotherapeutics. By J. S. Mitchell, C.B.E., M.D., F.R.S.; 1960. Oxford: Blackwell Scientific Publications. 9¾″ x 7¼″, pp. 284. Price: 52s. 6d. (English).

THIS book is based upon a series of lectures delivered by the author, Professor J. S. Mitchell. The work is a record of his research work at Cambridge, where he is Regius Professor of Physic and Radiotherapist at Addenbrooke's Hospital.

In Chapter I he considers fundamental problems of the mechanism of radiation action on cells. He places much importance on the effect of radiation on large molecular systems—for example, macromolecules of desoxyribonucleoprotein, which embrace in their environment synthesizing enzyme systems. Such molecules may have molecular weights of the order of 20 million. Radiation causes molecular breakdown by depolymerization and chain breakages, inactivation of enzymes, accumulation of protein metabolites and inhibition of nucleic acid synthesis. All these effects are included in the concept of the "macromolecular lesion". For many years large molecules have been known to be susceptible to radiation breakdown; the author points out that the processes are complex and ill understood, and so clinical radiotherapy remains an empirical art.

In Chapter II the author deals with chemical radiation sensitizers, and his work with many chemicals is fully detailed. He considers also radiosensitivity in relation to tissue oxygen tension. Improved results in the treatment of carcinoma of the lung are held to be obtained with the use of "Synkavit" as a sensitizer.

In Chapter III the author writes about a diverse series of practical problems, including the uses of radio-iridium and radio-cæsium as sources in gamma-ray treatment units, the clinical problems arising in the use of 30 MeV X rays produced by a cyclotron, the advantages of I^{134} over I^{131} for treatment of carcinoma of the thyroid, and the investigation of bone marrow for detection of neoplastic metastases.

All in all, this book is a record of Professor Mitchell's work and reading and the results of his biological and clinical experiments, and a statement of his philosophy. Anyone particularly interested in the problems discussed will be well satisfied with the detail which is recorded.

Hypothermia in Surgical Practice. By K. E. Cooper, M.Sc., M.B., B.S., and D. N. Ross, B.Sc., M.B., Ch.B., F.R.C.S.; 1960. London: Cassel and Company Ltd. 8½″ x 5½″, pp. 128, with illustrations. Price: 31s.

THE term "hypothermia" is wide in its application, and the authors and contributors to this book, all well experienced in this field, have clearly expressed their appreciation of this aspect and have confined most of the discussion to "moderate hypothermia", in which condition

the body temperature is maintained above 25° C. A practical approach to the subject has been maintained throughout the book, which is easy to read and presents all the essential features clearly and concisely in its 116 pages. The references are adequate and well documented.

B. A. Sellick presents an outline of the pharmacology of the commonly used drugs, and assists in discussing the physiological considerations of hypothermia; the more important aspects are well presented and the controversial issues wisely avoided. This author also gives a useful practical description of the technique of surface cooling and rewarming, with due emphasis on the need for adequate control; yet he makes scant reference to the method using blankets, which, when placed around the patient, accurately regulate the body temperature, by means of ice-cold or hot water (40° C.) circulated through them.

The metabolic problems are written by V. Wynn, who has cleverly avoided complexity, and has given a simple, concise and clear statement on the important aspects of this potentially discordant phase.

Hypothermia has a useful place in neurosurgery, as it facilitates the surgical technique and has extended the indications for surgery. A useful practical description has been presented by L. S. Walsh.

The final chapter on "unintentional hypothermia" with some interesting case presentations is well worth reading, and makes a pleasant ending to a book which should well serve its authors' intentions of "acquainting those starting to use hypothermia with a general background and enough practical details to enable them to use the technique and at the same time to warn them of the need for great care in its application".

An Introduction to Physical Anthropology. By M. F. Ashley Montagu; third edition; 1960. Springfield, Illinois: Charles C. Thomas; Oxford: Blackwell Scientific Publications. 9" x 5½", pp. 788, with illustrations. Price: £5 16s. (English).

MODERN MEDICINE has so much in common with modern physical anthropology that neither discipline can afford to ignore progress made by the other. Physical anthropology has long since escaped its thraldom to the pure biometrician and the pure statistician; the geneticist is in the ascendant at the moment, but that phase must pass, too, as the science approaches a more balanced outlook on humanity as a whole. Meanwhile, it is only necessary to recall the mutual contributions of medicine and anthropology to recent advances in knowledge of such subjects as differential body growth and proportions and the influence of the environment on both, adaptation, correlation of diet, blood chemistry and blood pressures, blood groups, hæmoglobin variants, genetics, etc., to appreciate how well the two sciences complement each other. Consequently, the appearance of Ashley Montagu's most comprehensive book should be welcomed by medical men in Australia, which is currently the recipient of so much new ethnic admixture.

Post-war progress in the study of man is reflected in the expansion of this work since the first edition of 1945, yet the book is still within easily manageable size. After an introductory chapter, it gives a detailed taxonomic account of the primates, including man, and their origin and evolution, on fairly traditional lines. The sections on neoteny and the criteria of ethnic differentiation are more dynamic, dealing with general biology, genetics, blood groups, hæmoglobins and haptoglobins, etc., and the influence of various environmental factors. The chapter on the major groups and ethnic groups of man reverts to traditionalism, but the next chapter on isolate differences is generally instructive. Chapter IX covers most aspects of the interaction of heredity and environment very well and includes an account of hereditary diseases and predisposition to disease; but surely the author does not really mean that 95% of all males get gout. That ends the text proper, but there are also four appendices covering respectively methods of measurement, body composition, gene equilibria and population genetics, and the UNESCO declaration on "race". The volume includes a "directory" of the most important anthropological periodicals and an extensive and remarkably up-to-date bibliography—a tribute to the author's learning in this field. The book is well produced and illustrated and there are very few typographical errors.

However, no single person today can cope adequately with all the specialized aspects of so vast a subject, and it is scarcely a reproach to say that the level of excellence varies from chapter to chapter. Perhaps inevitably, the author tends to be most exhaustive on subjects over which he is most enthusiastic. There is far too much detail on primate systematics for an "introduction", there is far too much theoretical discussion in the appendix on body composition, while the chapter on isolate differences contains a great deal of irrelevant matter on sociology and archæology. (With less archæology, the author might have avoided the error of dating the fourth to sixth Egyptian dynasties a thousand years too early.) A too rigid adherence to the over-simplified UNESCO statement on the major divisions of man produces such curious anomalies as those of grouping South African Bushmen and Hottentots in the "negroid" section, attributing a negroid strain to Australian aborigines, lumping all pygmies together and deriving Polynesians from the Mediterranean people, to name only a few. In the present state of our knowledge we must still take each ethnic group on its merits and avoid extended generalization. Also, we must not fall into the error of believing that blood groups are infallible ethnic markers. In connexion with the Rh blood groups, incidentally, the author unfortunately follows Wiener instead of using the better known and less clumsy Fisher system. The appendix on methods betrays the author's preference for the laboratory rather than the field, for he makes no distinction between what is possible in a well-equipped laboratory and what is practicable on field expeditions. Regrettably, there is no mention of important aspects of anthropology such as ethnic differences in blood chemistry, urinary composition, blood pressures, adaptation, etc. As a minor complaint, the directory of periodicals would be more conveniently placed after Appendix D instead of between Appendices B and C.

However, these are relatively minor blemishes on what is otherwise an admirable compilation. It will interest and instruct all who seek a wider view of human make-up than the average medical course affords, and certainly it should be in every medical and anthropological library.

Occupational Therapy in Rehabilitation: A Handbook for Occupational Therapists, Students and Others Interested in this Aspect of Reablement. Edited by E. M. MacDonald, B.Litt., T.M.A.O.T.; 1960. London: Baillière, Tindall and Cox. 9" x 6", pp. 364, with illustrations. Price: 37s. 6d. (English).

IN the foreword Lord Amulree writes of this book that "it should be a powerful influence for the proper spread of Occupational Therapy in the future". This undoubtedly it will be, if it attracts the attention of the medical profession and allied paramedical services.

Miss MacDonald, with the help of four co-editors and 19 other contributors, has produced a book which is eminently readable. This has been achieved by a well-conceived layout and a predetermined pattern for individual contributors, which has largely overcome the faults usually found where there is a multiplicity of contributors. As a result there is a fluency and a pleasing style which are quite refreshing.

The primary function is to provide a well-balanced British textbook for occupational therapists and students. This has been achieved. Indeed, for teaching purposes, it has immediate appeal, and will probably become the standard work in the United Kingdom and the British Commonwealth. The other major function is to explain the uses of occupation as a therapy to doctors and allied medical services.

Rehabilitation is a team approach to the total needs of the person. It suffers most frequently from lack of doctor leadership and from lack of understanding of the roles played by the various team members. This book, without dogmatism, but with empathy, defines the uses of occupation as a therapy and its integration into the over-all care of the patient. The temptation to overdo the missionary zeal has been satisfactorily resisted.

The individual chapters have an interesting pattern. Conditions are described simply, the occupational therapy approach is discussed, when possible actual cases are given as illustrative outlines of treatment, and there is a final summing-up of treatment. These summaries could well be used as models for those prescribing occupational therapy. Comprehensive references are given at the end of each chapter.

The section on psychiatric disorders is particularly well done. In dealing with physical conditions, the injunction to measure and record is well stressed.

The handling of cardio-vascular conditions could be improved by a better understanding of the natural history and danger of cardiac neurosis. This applies particularly to the management of hypertension.

The last 65 pages are given over to administration, evaluation, resettlement, and samples of forms used in various hospitals. Of necessity, much of this is against

a background of the *National Health Service Act* of 1946 and the *National Assistance Act* of 1948. However, the principles are generally applicable in Australia.

Altogether, this book is a most valuable and much needed contribution to British medical literature. Apart from its undoubted value to those who teach and practise occupational therapy, medical teachers, physiotherapy instructors, tutor sisters and hospital administrators, it can be highly recommended to the medical profession generally. Indeed, there are few who would fail to gain considerably in total case management.

Socrates on the Health Service: Dialogues of Today. From *The Lancet*, 1960. London: The Lancet Ltd. 8¼" x 5½", pp. 102. Price: 5s. (English).

THIS little book consists of some 24 essays written in the dialogue form which we associate with the name of Socrates and with the surviving works of Plato; they deal with the illogicalities of the British Health Service and with some controversial aspects of current medical practice.

The editor of *The Lancet* tells us on the fly-leaf that only one person could have written them, and leaves us to guess who this very witty and sometimes caustic person can be; certainly there cannot be many practitioners today, even in London, who have had the leisure to cultivate Greek authors of the fourth century B.C. to such a point that they can, although in mocking fashion, imitate their style so faithfully.

As a literary form by which to expound an opinion or persuade another to one's own viewpoint, dialogue has long been in desuetude; but now, obeying the rule that there is nothing new under the sun, it has come again to light in the form of television colloquies—a popular but, some might say, rather superficial method of presenting a subject. However, the work under review is far from superficial, and could, if read in company with others, provoke and sustain much good talk; indeed, we intend to read one or two to a group of young medical officers under instruction, and submit their substance to another revival of an antique and closely related teaching technique—the "group discussion". Finally, we must confess that only another dialogue will satisfactorily discover to our readers the real charms of this little work.

Diverticulitis. By Sara M. Jordan, M.D., and Russell S. Boles, Jr., M.D.; Modern Medical Monographs, No. 21; 1960. New York and London: Grune & Stratton. 8¼" x 5¼", pp. 96, with illustrations. Price: $4.75.

THIS monograph on diverticulitis was commenced originally by Sara Jordan; she was unable to complete it owing to illness, and the task was undertaken by Russell Boles.

The historical review of diverticulitis covers more than half the book, and is quite the most comprehensive and up to date which has appeared. In the second half of the monograph, complications are discussed in turn. Whilst accepting hæmorrhage as a complication, the authors rightly urge caution, and stress the importance of excluding carcinoma. Acute obstruction is rare, but chronic obstruction of the colon is common. Abscess formation, a difficult complication to manage, receives very brief mention only.

The book has been neatly produced. It is easy to read and is an excellent reference book on the subject.

Intraspinal Tumours of Childhood. By Robert W. Rand, M.D., Ph.D., and Carl W. Rand, M.D.; 1960. Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications Ltd. 10" x 6¾", pp. 578, with many illustrations. Price £6 12s.

THIS is a large and detailed monograph on a fortunately rare condition. The authors' task is a difficult one. Not only are spinal cord tumours uncommon in childhood, but there is also a very large variety of such tumours to be analysed, especially if one includes (as do the authors) other lesions which, while not arising from the spinal cord or its covering membranes, produce symptoms affecting this structure or the cauda equina in a manner frequently indistinguishable clinically from primary spinal cord tumours. Hence the authors include examples and full discussion of dermal sinus tracts, epidermoids, dermoids, teratomas, chloromas, leukæmic infiltrations, vascular anomalies, vertebral hæmangiomas, ganglioneuromas, neuroblastomas, medulloblastomas, retinoblastomas, extradural spinal cysts, sarcomas of different varieties and herniated intervertebral discs, and some 300 pages are devoted to such lesions.

The authors state that in few previous papers on intraspinal tumours of childhood has an effort been made to review in considerable detail the historical, clinical, pathological and surgical aspects of these lesions. The objective of this monograph is to supply this considerable detail, and in this it succeeds admirably.

The chapter on each condition is introduced by one or more apt quotations from the writings of pioneer authorities. There follows a full and interesting historical review together with some commentary on previously reported cases. The authors then report their own material in detail, and end the chapter with an analysis and summary of the findings. There are very numerous and well chosen figures. The reproductions of myelograms and of photomicrographs illustrating histo-pathology are excellent. The details in figures illustrating plain radiographs are unfortunately more obscure.

The book will not be easily read by students or inexperienced surgeons. Twenty-six pages only—and in the back of the book—are devoted to general considerations, such as history and presenting symptoms, examination, methods of investigation, operative and post-operative treatment and post-operative results. However, the monograph will be referred to with confidence by surgeons and neurologists requiring full detail on any of the numerous uncommon conditions described.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"The University of Glasgow Through Five Centuries", published by The University in Commemoration of the Fifth Centenary, 1951. 9¾" x 7", pp. 96, with many illustrations. Price: not stated.

"Origins of Alcoholism", by William McCord and Joan McCord with Jon Gudeman; 1960. London: Tavistock Publications Limited. 8¼" x 5½", pp. 194. Price: 55s. 6d.

"Congenital Deformities", by Gavin C. Gordon, M.B., F.R.C.S.E.; 1961. Edinburgh and London: E. & S. Livingstone Ltd. 9¾" x 6¾", pp. 136, with illustrations. Price: 37s. 6d. net (English).

"Drugs and Behavior", edited by Leonard Uhr and James G. Miller; 1960. New York: John Wiley & Sons, Inc. 9" x 5¾", pp. 696, with illustrations. Price: $10.75.

"Biochemical Aspects of Microbial Pathogenicity", edited by Werner Braun; *Annals of the New York Academy of Sciences*, Volume 88, Art. 5, November 21, 1960. New York: New York Academy of Sciences. 9" x 6", pp. 1021-1318, with illustrations. Price: $5.00.

"Anatomy and Physiology for Radiographers", by C. K. Warrick, M.B., B.S. (Lond.), M.R.C.S., L.R.C.P., F.R.C.S. (E), F.F.R., D.M.R.; 1960. London: Edward Arnold (Publishers) Ltd. 8¼" x 5½", pp. 272, with illustrations. Price: 30s. net (English).

"Heart Sounds and Murmurs: A Clinical and Phonocardiographic Study", by P. A. Ongley, Howard B. Sprague, M. B. Rappaport and A. S. Nadas; 1960. New York and London: Grune & Stratton. 10" x 7", pp. 368, with many figures. Price: not stated.

"Recent Advances in Human Genetics", edited by L. S. Penrose, M.A., M.D., F.R.S., with the assistance of Helen Lang Brown; 1961. London: J. & A. Churchill Ltd. 8" x 5¼", pp. 204, with 13 illustrations. Price: 27s. 6d. (English).

"Recent Advances in Tropical Medicine", by Sir Neil Hamilton Fairley, K.B.E., M.D. (Lond.), D.Sc. (Melb.), F.R.C.P., F.R.A.C.P., D.T.M. & H. (Eng.), F.R.S., Hon. F.R.C.P. (Ed.), Hon. M.D. (Adel.), Hon. LL.D. (Melb.), Hon. D.Sc. (Syd.), and A. W. Woodruff, M.D. (Durh.), Ph.D. (Lond.), F.R.C.P., D.T.M. & H. (Eng.), and J. H. Walters, M.D. (Camb.), F.R.C.P., Lt.-Col. I.M.S. (Ret.); third edition, 1961. London: J. & A. Churchill Ltd. 8" x 5½", pp. 488, with 15 illustrations. Price: 50s. net (English).

"Anæsthetic Accidents: The Complications of General and Regional Anæsthesia", by V. Keating, M.B., B.Ch., D.A., F.F.A. R.C.S.; second edition, 1961. London: Lloyd-Luke (Medical Books) Ltd. 8¼" x 5½", pp. 296. Price: 28s. net (English).

"Cerebral Dominance and Its Relation to Psychological Function", by O. L. Zangwill, M.A.; The Henderson Trust Lectures, No. 19; 1960. Edinburgh and London: Oliver & Boyd; Adelaide: Rigby Ltd. 9¾" x 7¼", pp. 40. Price: 18s. 6d.

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BOOKS AND BOOK REVIEWS.

NEARLY three thousand years ago, the Preacher said "Of making many books there is no end". What would he have thought of the twentieth century? Everywhere books tumble off the presses in their thousands: major publications, beautifully produced; routine solid tomes, recording the knowledge and thought of our day; paperbacks in vast quantities, now making an important contribution to serious literature; volumes and volumes of lighter stuff, biography, travel tales, fiction and the rest, good, bad and unspeakable. Who reads them all? Professional and business people, it is said, are too busy to read; television, films, sunny beaches and other attractions occupy those who do have leisure. Yet someone must buy and read books; else the publishers and booksellers would long since have put up their shutters.

The output of medical books does not lag behind. In "The Medical Annual, 1960", for example, is a list of over 700 English and American medical works and new editions published during the preceding twelve months. And this is quite apart from the enormous amount of material published in the more than five thousand medical and paramedical journals appearing regularly throughout the world. It is all rather staggering and raises the question of how anyone wishing to keep himself informed of what matters in medicine can hope to do so. Leaving aside the matter of journals—not because it is unimportant, but because it is a subject in itself—we may well be bewildered by trying to select and read the best in medical books. A seemingly endless stream of books for review pours into our office from publishers and booksellers—most of them from the United Kingdom and North America, an increasing number from Continental Europe, only a few as yet published in Australia, an occasional one from Asia, Africa or elsewhere. We try to keep faith with authors, publishers and booksellers, as well as with our readers, by reviewing the great majority of books received; a few are unsuitable for review, and some need only a note to indicate their contents. In 1960 we published reviews of over 400 books, a considerable increase on the number published during 1959 or any previous year. There is every reason to expect that the number for 1961 will be higher still.

For the work of reviewing these books we are indebted to an army of medical colleagues. Many do this important job no doubt because they welcome the chance to read a new book in their own field of interest; even more, we suspect, do it as a service to their professional colleagues and as an act of courtesy to the Journal of which we are very sensible. Very few, if any, would find the small fee that we pay a significant attraction in a busy professional or academic life, and no honour or glory accrues as we maintain the policy of anonymity of reviewers. On the whole the standard of these reviews is good, though we should welcome comment on this score from our readers. Our policy is to keep most reviews short, for reasons of space and ease of reading, though sometimes our reviewers not unreasonably chafe under the restriction of words, and we have to give them their heads. In general, the review of a medical book would seem to be covered satisfactorily if the reviewer states certain essentials: what the book is about, in the broadest terms; whether it is a sound book within the limits the author has set himself—an essential qualification if one is to be fair to the author; whether the author has achieved his purpose in writing the book; whatever else may seem important in relation to the production of the book, the way in which it is written, errors detected and possible improvements—comments welcomed by all but a very few highly egocentric authors or publishers.

The pattern is, of course, subject to considerable variation, and it is pleasing when a reviewer can invest informative comment and instructive criticism, all kept brief and to the point, with literary charm—a task which many do manage with admirable skill. To those who are interested in reviewing we commend an article entitled "Notes on the Reviewing of Learned Books" by one of the great figures in the field of the history and literature of science, the late George Sarton. Published originally in 1950, this article was reprinted last year.[1] Sarton thinks in terms of a somewhat longer review than we generally encourage and so allows for the covering of more ground, but his principles are excellent and his comments are stimulating. He says that before asking oneself how to review a book, it is useful to ask a more fundamental question, "How should one read a book?", and comments that "reviewing a book" in the technical sense, that is, writing and publishing a review of it, is "only a particular case of the methodic examination which must be made of any book if one wishes to use it intelligently". In most cases, he continues, the results of one's examination, the final judgement, will remain in one's consciousness; but, as distinct from this, the purpose of "public reviewing" is simply to communicate to the public the results of one's analysis. Others will then be able to decide whether it is worth their while to obtain the book reviewed and to study it. They will not necessarily accept the reviewer's verdict, but what he writes will help them to form their own judgement. Sarton points out that more than once he has bought a book on the strength of an unfavourable review. Incidentally, he favours the signing of reviews as an aid to evaluating them, adding the pungent footnote: "Praise and blame have no absolute value. It all depends on who is praising or blaming. To be blamed by an idiot may be the equivalent of being praised by a good man." This

[1] *Science*, 1960, 131: 1182 (April 22).

is a nice point, but it still does not outweigh the view that we have long held that unsigned reviews are more objective than those that are signed.

Sarton has some very blunt things to say about the "faithless reviewer", who agrees to review a book and fails to do so. "This is very shocking", he asserts, and proceeds to pound the offender into the ground with Gallic relentlessness and abandon, emphasizing the harmful repercussions of failing to keep faith, not only with the editor, but with the author, publisher and reader. He has little respect for procrastinators, whatever the cause of the procrastination; it "causes the same results, whether they be evil-minded, impotent or lazy". He accepts the fact that there may be extenuating circumstances, but sets down the general cause of delay as "mediocrity, weakness of will or other mental deficiencies". However, he is also constructive, and offers some advice on how to overcome inertia in beginning to write a review—the usual point of holdup, as most reviewers read their books readily enough:

> The inhibition may be overcome in various ways: one may diminish one's exaggerated feeling of responsibility by undertaking the review somewhat casually as if one were writing only for oneself or for a friend; or one may begin with the simplest preparatory investigation. By the time all the necessary investigations have been made, enough energy has been gathered to begin one's writing. Everybody will find similar tricks to outwit his own spiritual inertia, except that there is a degree of indolence and abulia which cannot be outwitted any more. The worst procrastinators are pathological specimens whom it is best to leave alone.

Amongst Sarton's many wise points is the one that there is no direct proportional relationship between the importance of a book and the length of the review. More often the two are in inverse proportion. "When a book is very good, it suffices to describe it, and to praise it briefly. On the contrary, if it is defective, the defects must be explained and discussed. If one says that a book is bad, one must be prepared to prove it." This is sound comment. It does not, of course, apply when a book is used as the basis of an extended comment or general discussion on the related subject.

For those who do not engage in writing public reviews, this discussion may seem somewhat academic, but perhaps it will prove useful in stimulating a review attitude, and so a more effective approach to reading, when any serious book is read. Poor reading habits can waste time, no light matter for busy people. To the many who put us in their debt by doing the hard work of reviewing books for the Journal, what we have said, and even more what we have borrowed from George Sarton, may be both of interest and of value. We hope that our book reviews may continue to be a useful and acceptable feature of the Journal.

Current Comment.

JET INJECTOR FOR MASS INOCULATIONS.

WE first commented on the development of a jet injector by the U.S. Army Medical Service some years ago.[1] This machine is an application of the fact that a percutaneous injection can be given without a needle if the material to be injected is delivered in a fine jet at sufficiently high pressure. (A traumatic example of the same principle is the grease-gun injury occasionally sustained by men using high-pressure grease guns.) In the original work leading to the development of a practical machine it was shown[2] that the diameter of the jet orifice should be less than 0·008 inch (optimum 0·005 inch) and the pressure should be less than 300 lb. per square inch (optimum 235 to 280 lb. per square inch), and the injector must be kept still during firing to avoid laceration of the skin. It is stated that injection by this means is less painful than an injection from a syringe and needle, but the real advantage is of course speed. Needle-changing and the necessity for the provision of large numbers of sterile syringes and needles are eliminated. So also is any risk of transfer of hepatitis or other diseases by contaminated syringes or needles. A further advantage is accuracy of dosage, which can be adjusted to any required amount within the capacity of the machine.

In civil practice as we know it there is of course little need for such expensive equipment, and for some time the jet injection was mainly an interesting gadget, used on a limited scale in the American Armed Forces. However, a report has recently appeared of its use under the sort of conditions for which the jet injector was really designed, namely in immunization campaigns for which the orthodox syringe and needle were just hopelessly inadequate. This report, by R. L. Towle,[3] describes the use of the jet injector in a mass immunization programme against cholera in East Pakistan. The machines used were the commercial product of an American firm, and are described as being "compact, fitting into a container the size of an overnight suitcase". The pressure for injection is applied to a plunger by release of powerful springs. Power for cocking the springs is supplied from a hydraulic system activated by an electric motor. The whole process of loading the discharge chamber, cocking the drive springs, and injecting the vaccine into the patient occupies only a few seconds.

East Pakistan has a population of about 46 million people, most of whom live in villages, and is one of the few remaining areas where cholera is still endemic. In 1958 it was estimated that cholera was here still responsible for over 10,000 deaths annually. Immunization against cholera and other diseases is one of the responsibilities of about 400 sanitary inspectors, who serve the entire country — that is, there is about one sanitary inspector for each 100,000 people. Immunization campaigns are further handicapped by such factors as very inadequate communications and the reluctance of uneducated villagers to line up for a "needle", the reason for which they cannot fully understand. In these circumstances the decision to use jet injection by an American-sponsored mission was an important experiment. In their initial demonstrations the mission found the reactions highly favourable. Towle notes that the fact that no needle was used seemed to impress the people more than any other factor. Many commented on the relative absence of pain and the speed of inoculation. From then on the jet injector appears to have been an unqualified success. In city areas inoculations were usually done from a station wagon equipped with a generator, and a microphone and speaker for publicity. There was no difficulty in attracting clients, and, with two injectors working, a maximum of 6759 persons injected in one day was recorded. Sanitary inspectors and doctors working in the same campaigns with syringe and needle reported about 100 inoculations per inoculator per day. In other words, one machine was doing the work of 25 to 30 trained inoculators, and almost certainly doing it more efficiently.

An emergency arose in Karachi as a result of extensive floods, and a mass-inoculation campaign against typhoid and cholera was hurriedly set in motion. Thirty centres were set up for the purpose, and one of the jet injectors was brought over from East Pakistan. In four and a half days approximately 20,000 people were inoculated by the jet injector, about the same as the total number inoculated

[1] MED. J. AUST., 1955, 1: 730 (May 14).

[2] *J. Amer. med. Ass.*, 1955, 157: 633 (February 19).

[3] *Publ. Hlth Rep. (Wash.)*, 1960, 75: 471 (June).

by the entire staff of the 30 centres, using syringes and needles, during the same period.

In rural areas the problem was complicated by the more scattered nature of the population, but even under these conditions it was possible to average 1340 inoculations per day. This again compared with reports of inoculators, who had previously worked in the same area, that the maximum number which could be given in one day by orthodox methods was about 100.

Even after allowance is made for the fact that the jet injector team was probably very much better organized than the average sanitary inspector, the immense superiority of the machine is at once apparent, and it is likely that in the not-too-distant future jet injectors will be regarded as essential equipment in any such large scale emergencies.

THE EPIDEMIOLOGY OF PLAGUE.

A LIVING AGENT which produces disease or provokes an immunity reaction in its host must steer a middle course if it is to survive as a strict parasite. It must have some means of passing from one host to another; and this must be efficient but not too efficient, for then the disease would exhaust all the susceptibles by killing them or make more difficult the passage from one host to another by provoking an immune reaction. The effect of having a large number of immunes in the host population viewed from the parasite's side is that it results in too many fruitless passages from host to host. Such considerations were known to the field epidemiologists, such as Sir William Hamer and A. G. McKendrick.

McKendrick had been a bacteriologist with the Indian Medical Service and was later Superintendent of the Royal College of Physicians' Laboratory in Edinburgh. While there he developed the theme that chance factors must be taken into account in considering the theory of epidemics. Sir Ronald Ross and others had developed a deterministic view of epidemics, neglecting chance factors. Such a deterministic theory suggested that, once an infection was introduced into a closed population, the epidemic would continue till all susceptibles had died or become immune. McKendrick's researches have been continued into modern times — for example, by M. S. Bartlett.[1] There are some striking examples of chance factors alone ending an epidemic. Smallpox has been twice introduced into the United Kingdom in recent years without an epidemic ensuing, even though there was available to the virus a large pool of susceptibles. Further, chance factors are still important even with an established epidemic. A disease with a short infective period, which provokes a solid immunity, like measles, is only with difficulty maintained in a population. Bartlett has elsewhere given evidence that measles is always likely to die out in a city of less than a quarter of a million. Australian experience would support this view, as there is good evidence that measles has died out in several of the Australian States at different times. Perhaps measles is not indefinitely self-supporting in any isolated population of less than several millions. For a highly infectious disease such as influenza the total population of the world does not suffice to keep an epidemic going.

M. Baltazard[2] describes how this line of reasoning has been recently applied to plague. It had been thought that the disease was due solely to highly susceptible rodent species because of the spectacular epizootics among them — the domestic rat, the gerbils of South Africa, the tarabagans of Asia and the ground squirrels of America. However, in interepizootic periods, plague could usually not be found by investigators in these species. In 1952 the Pasteur Institute in Iran suggested that highly resistant species play an important part as a reservoir of the disease. In Kenya, R. B. Heisch proved that in what had been regarded as a "pure murine" focus *Rattus rattus* played no part in maintaining the disease between epidemics. Similar findings have been reported from the Soviet Union and the United States of America. Work by the Pasteur Institute of Iran has shown that it was necessary to have a dense population of very highly resistant rodents capable of surviving the most violent epizootic plague in large numbers — that is, sedentary rodents living in deep burrows with a favourable microclimate.

The new theory gives a better explanation of the spread of plague. It has been shown in some cases that plague is spread by these field rodents, which pass the disease on to the more susceptible rodents, which in turn infect man. It helps to explain why no new plague spots occur in India after early June — the field rodents have closed themselves in their burrows with food supplies (æstivation) and have ceased to move around. These wild rodents also carry the infection over into the next season. The theory may also explain why plague did not become endemic among Australian rats after the several plague incidents in Australia early this century. It may be that *R. rattus* and *R. norvegicus* were incapable of maintaining the infection and no wild rodents had an opportunity to come in contact with the infection.

Plague has declined in importance in the last fifteen years and is now, because of quarantine regulations, spread only by coastal shipping. *R. rattus* is more affected by hygienic measures and is being replaced by *R. norvegicus*, and so plague will have more difficulty in passing to man. The new theory has important implications for control measures. It has been shown in the Soviet Union, for example, that some foci of plague infection could be eliminated by dealing with the wild rodents.

[2] *WHO Chronicle*, 1960, 14: 419 (November).

[1] "Stochastic Population Models in Ecology and Epidemiology"; Monographs on Applied Probability and Statistics; Methuen, London, 1960.

LIGHT COAGULATION.

IN 1945 G. Meyer-Schwickerath[1] observed chorio-retinal burns in patients who had observed an eclipse of the sun. The idea was then conceived that a chorio-retinal burn such as this could be of value in the treatment of eye disease. Working in the University of Bonn over a period of years, he finally perfected the technique of light coagulation, for the treatment of various conditions. This is probably the most important ophthalmological achievement of the past 15 years. The intensity, duration and wavelength of the radiation were so chosen that any undesired damage is impossible provided that the treatment is properly applied. Light coagulation produces almost the same ophthalmoscopic picture as does diathermy coagulation. Histologically it is different: only the inner layers of the sclera show signs of coagulation, the vitreous and its limiting membrane are not affected. For light coagulation to be effective there should be a light-absorbing tissue immediately behind the retina, namely the choroid, and for this reason the distance between retina and choroid must be less than two dioptres.

Recently W. S. Tassman[2] has briefly reviewed the indications for light coagulation, and D. Pischel and B. H. Colyer[3] have described the results of treatment in 224 cases. The technique is eminently suited for the prophylaxis of retinal detachment, i.e., the closure of a retinal hole before a detachment and the sealing of macular holes; it is also very suitable for diseases such as von Hippel-Lindau disease, Eales' disease, Leber's miliary aneurysms, small retinoblastomas and small malignant melanomas.

It may be accepted that light coagulation is a most useful and powerful therapeutic agent capable of tremendous good, provided that ophthalmologists are conversant with the technique and the limitations of its use.

[2] *Trans. ophthal. Soc. U.K.*, 1956, 76: 739.

[3] *Arch. Ophthal.*, 1960, 64: 616 (October).

[3] *Amer. J. Ophthal.*, 1960, 50: 590 (October).

Abstracts from Medical Literature.

ORTHOPÆDIC SURGERY.

Closed Fractures of Long Bones.

J. R. MOORE (*J. Bone Jt Surg.*, July, 1960), in his presidential address to the American Orthopædic Association, puts the case for avoiding open reduction of closed fractures. At his own clinic, open reduction has been restricted for many years to less than 5% of closed fractures of long bones. In adults, open reduction is essentially restricted to non-reducible articular fractures of the proximal portion of the femur and fractures associated with local circulatory failure. During the growth period open reduction is limited to cases of widely displaced radial head, of displaced epicondyle of the humerus, and of widely displaced femoral epiphyseal fracture. The author refers to the slow but steady stream of tragedies secondary to the open reduction of fractures in patients who have been referred to his clinic, and cites examples of cases complicated by osteomyelitis following open reduction in which the patients had undergone many surgical operations. In many of these cases the original fractures had been relatively uncomplicated. Closed reduction had been attempted in a small percentage of cases, but the author questions whether the attempt had been an honest one. The complications had been non-union, or non-union and osteomyelitis. The period of loss of work averaged 30 months, with gross loss of income to the patient and heavy hospital costs. The author describes the principles involved in avoiding the need for open reduction. He considers that not many fractures need urgent reduction. This makes reduction an elective procedure to be done at a time when the best facilities are available and when it can be performed by, or under the guidance of, a skilled surgeon. The reduction should be planned by competent analysis of the components of the deformity. Very often the presence of a rotational deformity is overlooked. Thus the final reduction can bring all the components of the deformity under control by reduction in one "symphony of movement". In discussing stability, the author states that this can be assessed only after reduction has been attempted. Some unstable fractures can be dealt with by the careful application of an unpadded plaster splint; for others the author uses half pins incorporated in the plaster. The details of this technique are given. The necessity of adequate periods of immobilization is stressed. The author states that positions should be those of physiological rest, and that muscles will not atrophy if they are not damaged or do not have their circulation destroyed by œdema or tight plaster.

Fractures of the Carpal Navicular.

O. RUSSE (*J. Bone Jt Surg.*, July, 1960) describes his technique in the management of fractures of the carpal scaphoid. He presents details of an X-ray technique which includes two antero-posterior views, midway between supination and pronation and in 15° of supination, as well as a true lateral view with 90° of supination and a further antero-posterior view in 15° pronation. These films are repeated at two weeks' interval if tenderness over the region of the scaphoid persists. Even if the X-ray films are clear, three lots of pictures are taken before it is assumed that all is well. The author tabulates the types of fractures which may occur, namely, horizontal, oblique, transverse and vertical oblique. The line of the fracture is described in relation to the long axis of the bone. He demonstrates the likeness of the vertical oblique fracture to Pauwell's Type III fracture of the neck of the femur. He notes that this type of fracture also takes longer to heal and is harder to immobilize, because of the shearing forces which act across the fracture line. The author points out that the presence of sclerosis at the margins of the fracture in fresh fractures is an indication that union is occurring. His method of immobilization is standard, the first metacarpal bone being included in the plaster, but not the thumb itself; the fingers are kept mobile. Sometimes when the fracture is oblique, he extends the plaster to enclose the fingers completely. The cast is carefully checked each week, and replaced if it is loose or defective. The author discusses the healing process and recalls that the fracture surfaces separate and a cystic appearance occurs if the fracture is not immobilized. This begins within a few weeks, and after a few months there develops a "traumatic cavity". Next follows the appearance of the sclerotic margin of established non-union. This he treats by bone grafting, provided there is no spreading arthritis. Increased density of the proximal fragment, indicating avascular changes, occurred in 30% of his cases. He notes that this change is reversible, and not an absolute indication for operative intervention. Bony union was obtained in 97% of the author's series of 220 fresh fractures. His operative technique in cases of non-union is described. This involves the use of a peg made from cancellous bone from the iliac crest, which is packed in position with bone chips.

Fractures of the Pelvis.

G. F. DOMMISSE (*J. Bone Jt Surg.*, August, 1960), of South Africa, discusses the anatomy, mechanism and treatment of pelvic fractures, which are common results of automobile accidents. The sacrum, which is the keystone of the pelvic arch, is fixed by mobile joints with a strong posterior ilio-lumbar and a weak anterior ligament. The pubic arch forms a horizontal tie-beam. If this is broken, the weak anterior ligaments allow the sacro-iliac joints to dislocate. Lateral pelvic arches are formed by the acetabulum and the anterior superior spine, and by the ilio-tibial tract and the gluteus medius and minimus down to the femoral attachment. Thus the arcade structure is perfected to transmit body weight to the legs. There are two main types of injuries. The first is due to indirect violence transmitted to the pelvis whilst the patient is sitting, as when the knee strikes the dashboard of a car following an accident. In these circumstances the basic injury is that which occurs when the hips are flexed at less than a right angle and the thighs are neither abducted nor adducted; the acetabular shelf resists the blow and the interpubic ligaments and anterior sacro-iliac joints are torn; fractures may occur in the region of the body of the pubic bone instead of the ligaments tearing. If the leg is adducted, the posterior lip of the acetabulum breaks and the hip dislocates backwards. If the force goes through the thinnest part of the acetabulum, then a central dislocation of the head of the femur occurs. The author discusses treatment of each of these types of damage and notes that visceral injuries are not as common as in the next group. He considers that reduction by open operation allows direct inspection and gives a greater chance of success. The second main group of injuries is caused by direct crushing violence applied side to side, front to back or, more rarely, vertically through the ischial tuberosities. Side to side crushing is usually associated with bladder injury; in treatment, abduction of the femur allows control of the ilium, and if open operation is necessary to treat the bladder, there is an opportunity to reduce the fracture dislocation bimanually; it can be controlled by a short double hip spica. Antero-posterior compression is usually associated with severe violence and internal injuries; the symphysis separates and the pelvis opens with movement of the sacro-iliac joints on one or other side; a plaster spica is not tolerated and a pelvic sling is not effective. Open reduction with the wiring together of the separated symphysis is the best treatment. The author drives a two-inch screw into both pubic bones and lashes them together with heavy wire. He notes that a delay of two or three weeks does not prejudice the result.

Acute Osteomyelitis.

N. H. HARRIS (*J. Bone Jt Surg.*, August, 1960) discusses the lessons learnt from the review of 45 cases of acute osteomyelitis. He finds that the crucial point in the management of osteomyelitis so as to prevent relapse and sequestration is early diagnosis. He emphasizes that penicillin treatment without hospitalization and close clinical and laboratory control leads to masking of the disease and delay, with resulting extensive bone involvement, sequestration and what the author terms "scavenging" operations to remove sequestra and to drain chronic abscesses. An early correct diagnosis is obtained by careful full clinical examination, which should be repeated after two hours if necessary. Most patients presented with the following groups of symptoms and signs: high fever, obvious "toxicity", severe pain at one site in a limb, well-localized tenderness and sometimes swelling over the affected part. It was noted that a high white cell count did not occur and that the erythrocyte sedimentation rate was usually raised early. The author also notes that a fall of the erythrocyte sedimentation rate did not herald complete cure. He stresses the importance of early antibiotic treatment with tetracycline, which should be given in full dosage for at least a month.

If response does not occur, surgical drainage is important, and provided that treatment is initiated early, does not in itself make relapse more likely.

Osteoarthritis of the First Carpo-Metacarpal Joint.

A. H. G. MURLEY (*J. Bone Jt Surg.*, August, 1960) reports on the results of excision of the trapezium in the treatment of 34 patients with painful osteoarthritis of the first carpo-metacarpal joint at the base of the thumb. He mentions conservative measures which have been used and the alternative surgical methods of forage (Forestier, 1937) and arthrodesis (Muller, 1949). The technique used for excision is a slight modification of that described by Gervis in 1949. The author describes the operative technique and the after-care in detail. The results generally were good. Interference with the cutaneous branch of the radial nerve was a common complication of the operation, and it was thought that there was some weakening of the grip. This did not matter, as most of the sufferers were elderly women and they were satisfied with having relief from pain. The best results were obtained in those cases in which pain was related to use and was not worse at night.

PÆDIATRICS.

Adrenocortical Steroids and Growth of Nephrotic Children.

D. FLEISHER *et alii* (*J. Pediat.*, August, 1960) state that the linear growth of children with nephrosis is retarded during the active phase of the disorder and becomes accelerated during spontaneous or induced remission. Nitrogen balance then becomes positive and rapid statural growth occurs in an apparent effort to catch up to the expected height. Steroid therapy to induce and maintain a remission of the disease appears to cause a decrease in the expected nitrogen anabolism and hence retardation of expected growth. The authors studied the linear growth patterns of two groups of children with nephrosis. One group received prolonged intermittent corticosteroid therapy to maintain remission and the other group did not. Although the growth increments of each group were accelerated just prior to and after remission, growth increments of the patients receiving intermittent corticosteroid therapy were significantly lower than those of the control group. These differences in growth rates were no longer significantly different when intermittent corticosteroid therapy was discontinued in the first group.

Meconium Ileus.

J. MACDONALD AND G. TRUSLER (*Canad. med. Ass. J.*, October 22, 1960) report 27 cases of meconium ileus in which operation was performed. Owing to the serious nature of the basic disease, the results of operation are often disappointing. Of the group of 27 patients, nine survived to leave hospital, and of these four have since died of fibrocystic disease. A positive family history of fibrocystic disease in a newborn infant with intestinal obstruction strongly suggests meconium ileus. In about 50% of these cases a plain abdominal X-ray film will reveal a typical picture, namely, distended small bowel loops of varying size plus the "ground glass" appearance produced by small bubbles of gas scattered through the meconium of the distal part of the small bowel. These radiological findings often differentiate this condition from such lesions as ileal atresia and Hirschsprung's disease. Meconium ileus makes up 7% to 15% of all intestinal obstructions in the newborn. The operative mortality is high, and the long-term outlook is disappointing. Most of the pulmonary complications are an expression of the fibrocystic process in the tracheo-bronchial tree. Peritonitis, an important cause of morbidity and death, usually results from a leak at an intestinal suture line or from perforation of the proximal small bowel. The authors report that ileotomy with removal of the obstructing mass of meconium by dilute hydrogen peroxide irrigation has given the most consistently good results in meconium ileus. In many cases it is advisable to excise the segment of small bowel that is markedly dilated.

Surgical Treatment of Ulcerative Colitis in Children.

K. SAWYER *et alii* (*J. Amer. med. Ass.*, November 19, 1960) state that ulcerative colitis is not rare in children. Because of its chronic, relapsing nature, its occurrence at a time of active growth and the severe associated complications such as perforation, hæmorrhage, arthritis, liver failure and carcinoma, this disease requires careful evaluation and delicate care. In their review the authors present four cases to indicate that once a case of ulcerative colitis is irreversible, regardless of the patient's age, active surgical intervention is indicated. The only adequate surgical procedure is an ileostomy and a colectomy, with or without proctectomy. Children adjust much more readily to an ileostomy, once they understand it, than do adults. The five circumstances in which surgery becomes mandatory are acute fulminating disease which fails to respond to medical management, carcinoma or suspected carcinoma, systemic manifestations such as pyoderma gangrenosum, liver damage and incapacitating arthritis, benign stricture with obstruction, and chronic disease that is intractable or involves invalidism.

Freeze-Dried B.C.G.

J. LORBER AND P. MENNEER (*Arch. Dis. Childh.*, October, 1960) state that freeze-dried B.C.G. has been proved in the laboratory to be of uniform consistency and to have a viable bacterial count which, if kept in a cool place, persists unaltered in the dry state for a year or longer. It is safe and convenient to use. Over 1000 children were injected intradermally. The result was a papule, averaging 6 mm. in diameter. There was neither ulceration nor enlargment of the regional lymphnodes. Tuberculin conversion was demonstrated in almost 100% of the children six to eight weeks after vaccination, and a positive tuberculin reaction was maintained for at least one year after vaccination. In the case of others who were vaccinated with weaker vaccines the proportion of positive reactors increased with time, indicating the probability that prolonged tuberculin sensitivity will be produced with the freeze-dried vaccine in current use.

Subdural Effusions and Pyogenic Meningitis.

P. BENSON *et alii* (*J. Pediat.*, November, 1960) have investigated patients in whom subdural effusions complicated acute purulent meningitis for the presence of clinical and developmental abnormalities at follow-up, and used as a control group patients in whom subdural taps were "negative". More than 50% of the patients were examined more than four years after their acute meningitis. In the majority of instances meningitis was caused by *Hæmophilus influenzæ*, but this organism was not found more frequently in patients with effusions than in the controls. Patients with pneumococcal meningitis seemed more likely and those with meningococcal meningitis less likely to develop subdural effusions than not. A relatively poor prognosis was associated with the presence of coma, convulsions, or neurological abnormalities at the onset of the acute meningitis. This was true in the presence or in the absence of effusions. Among those with effusions permanent sequelæ tended to be more frequent in those in whom effusions were large and persisted for long periods of time. In patients treated with subdural taps alone prognosis was better when the indication for termination of therapy was evidence of a dry subdural space than when drainage was discontinued earlier. Patients in whom membranes were seen and excised did very well in spite of the presence of previously stormy courses, while those in whom membranes were seen and not removed had a high incidence of permanent sequelæ.

Treatment of "Hypsarrhythmia" with ACTH.

W. TROJABORG AND P. PLUM (*Acta pædiat.* (*Uppsala*), September, 1960) give an account of 30 cases of infantile spasms, a frequent form of epilepsy in infancy, characterized by isolated contractions in the extremities, trunk and head occurring repetitively with brief free intervals and in numerous series daily. Electroencephalographically, a typical picture is found in 80% of the cases. In the authors' series, air encephalography showed atrophy of both cortical and ventricular origin which was progressive in some of the cases. Twenty-two of the patients were treated with ACTH. In seven, definite clinical effect in the form of reduction or cessation of the attacks occurred, but without any definite effect on the mental state, and in four patients the electroencephalogram also returned to normal. In three cases an effect upon the electroencephalogram alone was found and 12 patients showed neither clinical nor electroencephalographic improvement. The possibility that the condition may be due to a cerebral autoimmunizing process is suggested. Nothing is yet known concerning the mode of action of ACTH in the cases presented. The authors suggest that ACTH may interfere with an active process of autoimmunizing nature. To achieve favourable effects early institution of treatment is essential.

Special Article.

DEVELOPMENT OF A REHABILITATION CENTRE.[1]

FOR over a decade, the rehabilitation field in Victoria has been left almost entirely to the Commonwealth Rehabilitation Branch of the Department of Social Services, which has carried out excellent pioneering work at the Residential Centre at Maryport and at the Day Centre at Coonac. In the last three years or so, there has been a rapidly growing awareness of the value of rehabilitation and we have seen the establishment of special units — geriatric, paraplegic and psychiatric.

The rapidly mounting road toll, with pressure on hospital beds, has emphasized the necessity for further rehabilitation facilities. In many severe accident cases, such as severe fractures and amputations, the patients have had to wait many months after their definitive surgery before they could obtain admission to a rehabilitation centre. During this time they have either occupied precious beds in general hospitals with a limited rehabilitation programme, or they have been discharged home, visiting as outpatients two or three times a week at most and often becoming more and more despondent and worried about their ultimate return to work.

It is precisely these early months that are so vital; once a patient has lost the desire to get well or has lost confidence in his ability to recover, the battle is already half lost and the road back to an independent life becomes long and weary.

It was in order to meet this need that in November, 1958, the Hospitals and Charities Commission, with the enthusiastic support of the Chairman, Dr. John Lindell, sponsored the development of a new rehabilitation centre, and accepted financial responsibility for such a hospital during the early years of establishment.

The Aims.

The first decision was to determine the scope and purpose of the hospital. The aims were defined as follows:

1. The hospital should be geared to deal with the active rehabilitation of serious accident victims—those with fractures, amputations, nerve lesions, etc.

2. Such patients should be accepted as early as possible and preferably as soon as the definitive surgery was concluded.

3. Close liaison should be maintained with the referring surgeon or hospital for purposes of review, X-ray control, removal of plaster, further surgery, etc.

4. It was held that rehabilitation would not be complete unless every effort was made to discharge the patient direct into a suitable job.

5. The unit should commence as a residential centre, with later development of an out-patient service. It was held that the ideal would be to combine both these functions.

6. Patients would be accepted mainly in the wage-earning group 16 to 60 years.

7. Apart from accident cases, the centre should also provide active rehabilitation for short-term use (three months or so) in general medical cases — for example, hemiplegia, respiratory and cardiac conditions. Patients with chronic diseases of the locomotor system — for example, arthritis, paralysis, multiple sclerosis, would be admitted for a short course of rehabilitation, including the provision of self-help and home-aid devices, but it was considered that long-term cases were best dealt with at other centres, such as Maryport.

8. Paraplegics and psychiatric patients should be excluded. It was held that paraplegics were best treated at special paraplegic units, and that it was unwise to place frank psychiatric patients alongside accident patients.

The Site.

Psychologically, rehabilitation is better carried out with the patient removed from the immediate hospital atmosphere, since such a centre is the halfway house between hospital and home. Pleasant surroundings and the provision of ample space for outdoor games and activities are both helpful. On the other hand, the aims of this centre compelled us to see that we were not far away from large hospitals, since many of our patients would require frequent review and further surgical care. The site should also permit of expansion to a patient load of at least 50 or 60, because it is not economical to operate on a much smaller number than this.

In January, 1959, it was decided to take over the Royal Children's Hospital Annexe at Brighton. This site, comprising some four acres, was in pleasant surroundings, just across the road from the beach. It was only eight miles from the city of Melbourne, the buildings were peculiarly adaptable for conversion at a minimum of expense and there was sufficient room for expansion, with careful planning.

At this stage careful planning was carried out — not only for building alterations, but for the staffing and operation of the centre. Since the establishment of this centre would probably serve as a pilot scheme, we set our standards high. We felt strongly that success or failure would depend on personnel and not on buildings; we felt that the *tempo* of the unit must be set from the top; and we felt that enthusiasm was just as essential as qualifications. We decided to commence with a minimum of staff, carefully hand-picked, and to add further staff only as required. We have been very fortunate indeed that our initial key personnel have been not only highly qualified, but real enthusiasts in the field and most of them have overseas experience — a matter of some importance in such a pioneering venture.

Building alterations commenced in February, 1959, and in March the site was vacated by the Royal Children's Hospital. Key staff members had been appointed and were actively taking part in all planning operations. Existing buildings on the site comprised an old administrative block, a two-storey nurses' home, a single-storey pavilion-type dormitory and treatment block and various outbuildings.

The administrative block was retained, with matron's flat and office, board room and inquiry desk and switchboard. Three rooms provided (i) a two-bed ward, (ii) a three-bed ward and (iii) a six-bed ward, all for female patients. The kitchen was modernized, serving into a self-service dining-room, with two other recreation rooms adjacent, and a library is maintained by the Red Cross. The nurses' home is only partly used for residential staff, but will later be incorporated in building development. The male dormitory and treatment area were connected to the main block by a covered way. This dormitory required little alteration for conversion into four six-bed bays for male patients, with a two-bed sick bay and adjacent nurses' station. One large room was converted into a locker room and toilets were modified with wide doors, grab rails, etc. Adjacent to the dormitory, space was available and reserved for future additional male bed accommodation. The treatment block consisted of a central hall, from each side of which extended a wing 70 feet by 23 feet. The eastern wing was given to occupational therapy, the western wing became the gymnasium and physiotherapy department and a large central room abutting on the hall was used as a planning and conference room. Immediately to the north of the treatment centre, an area of a quarter of an acre was reserved for outdoor games and activities. This was cleared and levelled and planted with grass.

Although building alterations began only in February, as early as the end of May three patients were admitted, so that the staff could find their feet and learn to function

[1] Read at the annual meeting of the Australian Association of Physical Medicine and Rehabilitation, Canberra, October 27, 1960.

as a team. With building alterations almost completed and with 15 beds occupied, Hampton Hospital was officially opened on August 27, 1959, by the Governor of Victoria, Sir Dallas Brooks.

Block planning of the site was carried out at a very early stage and forward planning was developed in stages up to ultimate capacity, in order that maximum use should be made of the site and that future development should proceed in an orderly fashion. Forward planning was kept flexible, because only time will show whether demand is greater for in-patients or out-patients. By May, 1960, the hospital was beginning to get on its feet. Male beds were fully occupied and already a few out-patients had been taken by special request. It was thought that the second stage of development should begin. This work was begun in June, 1960, with the building of a new remedial gymnasium measuring 80 feet by 40 feet and extension of the occupational therapy department to about three times its previous size. When this is completed, physiotherapy will move into the wing previously used for physiotherapy and gymnasium and an out-patient service will be established.

We have already made a start with a self-help and home-aids advisory service, whereby a crippled patient may attend the centre and be assessed for the activities of daily living and have suitable aids prescribed. The patient is shown how to use the aids, told where they may be obtained and the cost, and when such devices are not available on the open market, shown how they may be made.

Staffing.

Although financially supported by the Hospitals and Charities Commission, Hampton Hospital is an autonomous body, with its own Committee of Management. The Committee represents wide interests, comprising two medical men, two local councillors (both ex-mayors), a nominee of the Victorian Employers' Federation and the manager for Australia of an insurance company; the president is a leading business and political figure. The matron acts as chief executive officer, responsible for the general running of the unit, and this is, of course, a key position. The honorary medical director spends all day Wednesday at the centre, part of his time is devoted to seeing patients and at least an equal amount of time is devoted to staff discussions, teaching, developmental projects and forward planning. As there is no resident medical officer, there is a trained nurse coverage round the clock and in emergencies local medical clinics are called upon.

The present treatment staff consists of a remedial gymnast, two physiotherapists and two occupational therapists, the senior member in each branch possessing considerable overseas experience.

Operation of the Unit.

Although most cases come from large hospitals, patients are accepted from any medical practitioner. In order to aid in the selection of suitable cases, the referring doctor fills in a physician's request form, which supplies the relevant clinical details. If the case is considered unsuitable, the doctor is informed of the decision and the reasons for it and when possible alternative measures are suggested.

Patients are admitted on a Monday and interviewed by the matron, who not only inducts them into the Centre, but also acts as an almoner investigating their home conditions, financial problems, etc. On Tuesday the patient is assessed by each of the three treatment units, and the three reports are placed in the history. On Wednesday the initial assessment and planning conference is held, with all members of the team present, including the matron and the medical director.

Follow-up conferences are held at intervals as required. The history and reports are first considered; the patient is then examined, and a round-table conference is held to determine the aims of treatment and the best way in which this may be achieved. The planning schedule aims at keeping the patient occupied all day, with a dovetailed programme of physiotherapy for specific treatment, remedial gymnastics (which extends specific conditioning and also caters for general conditioning, including indoor and outdoor games) and occupational therapy, which is kept remedial as far as possible.

The patient is brought into the picture right at the start; he is told what we can do and what we cannot do and the way in which we shall proceed. If he is going to have a permanent disability, we tell him so — it is far better for him to face up to this early rather than to be given false hopes. He is told he is the most important member of the team, and that he must work to get well.

As early as possible we try to determine whether he will be able to resume his previous employment and if this is not possible, then alternative employment is planned. The sooner he knows what his future employment will be and the sooner he knows that the job is waiting for him, the greater is his cooperation. Every worker in the field will agree that the greatest single factor which determines success or failure is the motivation of the patient.

In placing patients in employment, we lean heavily on the shoulders of the local employment officer of the Commonwealth Employment Service, who visits the Centre each week and gives unsparingly of his time and energy. Through the good offices of the same department, we are able to arrange for vocational guidance assessment in difficult cases. Work tolerance and preemployment assessment is carried out by the occupational therapist, who closely works with the employment officer.

Many of our amputees face some delay before they are ready for their prosthesis, either because we receive them straight after surgery, or because the problem is complicated by some other factor, such as diabetes or peripheral vascular disease. For these patients we provide pylons, hand-tailoring our own fibreglass buckets for each individual case. We believe that stump shrinkage is promoted by early use of such devices and sometimes we convert them into a temporary prosthesis by adding a knee hinge and suitable foot.

Teaching.

Apart from post-graduate demonstrations, this hospital conducts regular undergraduate training for physiotherapy and occupational therapy students.

Results.

In just over 12 months — that is, from May, 1959, when the first patient was admitted, until June 30, 1960 — our results are as follows:

There were 97 admissions and 74 discharges. The average stay in hospital was 57·9 days. Of the 74 patients discharged 24 were discharged to their previous employment and 23 direct to alternative employment.

There were three male upper-extremity amputees, all workers' compensation patients; all resumed their original jobs. Four males had lost a single lower extremity; one was a workers' compensation patient. All went straight into alternative employment. One male patient, a double lower-extremity amputee, did not resume work.

Of the hemiplegics, 13 were males, three being workers' compensation patients. Two resumed their original jobs, three went direct to alternative employment and one took an alternative job later. There were two females, neither of whom resumed employment.

Of the patients with severe hand injuries (all workers' compensation patients), five were male and one female. Of the male patients, one resumed his original job, four took alternative employment. The one female patient took alternative employment.

The other cases comprised patients with severe and multiple fractures, dislocations and nerve lesions.

Acknowledgements.

This hospital is only just on its feet and we realize that we still have a long way to go; but we should never

have progressed so far only for the help given us so generously by so many people. To every member of our enthusiastic staff I extend my humble thanks, as I do to our energetic Committee of Management. To the Hospital and Charities Commission and particularly to the Chairman, Dr. John Lindell, we can only express our sincere thanks, not only for financial backing, but for their encouragement to us in this pioneer venture. We could not have succeeded without the generous assistance of the Commonwealth Employment Service, and of the Rehabilitation Branch of the Department of Social Services, and I should like to thank Dr. Naomi Wing and Dr. George Burniston for their personal interest and help at all times.

LEIGH T. WEDLICK,
Honorary Medical Director,
Hampton Hospital,
Melbourne.

Out of the Past.

DEATHS UNDER CHLOROFORM.[1]

[From the *Australasian Medical Gazette*, February 20, 1902.]

THE prevalence of deaths during the administration of chloroform still continues, and recently ether has been blamed for the death in one case. Apparently, the medical man who made the autopsy did not agree with this opinion, for the evidence made it appear that the death was due to shock following upon a serious and dangerous operation.

Another death occurred whilst chloroform was being administered, and this time at the St. Vincent's Hospital. In this case the sufferer was a farmer, aged 45 years, who had been suffering from diseased bone in the arm. The symptoms were of the usual type recorded, viz., after the administration of a certain amount of anæsthetic the patient began to struggle violently, and then after the administration of a little more he suddenly ceased to breathe. The usual remedies were unsuccessfully tried to revive the patient, whose heart, according to the evidence, continued to beat for nearly one hour and twenty minutes. The cause of death, in the opinion of Dr. Stawell, who made the autopsy, was dilatation of the heart and heart failure.

The feeling of insecurity such cases as these give the public must have a highly prejudicial effect upon patients who may have to undergo operations, and it is a great pity that the publication of every death under big headings in the daily journals should be countenanced, as it does no good to the profession or to the public. Many times operations are only undertaken "in extremis" in the forlorn hope of saving life, and death, under such circumstances, should hardly be ascribed to the anæsthetic. There is no doubt that the administration of chloroform should only be undertaken under the direction of an experienced anæsthetist, and no cases, in hospitals particularly, should be operated upon without this direction except in great emergencies.

Medical Practice.

SOME THOUGHTS ON THE REHABILITATION OF ELDERLY PATIENTS IN PRACTICE.

IN most developed countries only 3% to 4% of all old people are in institutions, but only a small proportion even of sick old people are in hospitals (W.H.O., 1959). In New South Wales alone, Cummins (1960) has estimated that among those who are aged 55 years and over, there are approximately 93,500 persons suffering from chronic illness of three months' duration or more; some 10,000 of this group require hospital or institutional beds, the remainder being suitable for care at home. Yet only 2500 beds are set aside especially for the aged and chronically ill by the State and by voluntary and religious organizations, the gap being narrowed to some extent by accommodation provided in other institutions. Therefore it would seem that great responsibility for the management of elderly patients rests with the family doctor, and as the proportion of aged people in the total population continues to grow, it is likely that this responsibility will increase.

Many of these sick old people can be rehabilitated to a significant extent, but practitioners may be deterred by the belief that special techniques, training and equipment are essential. The specialized methods of physical medicine are of inestimable value, but in some circumstances they may not be available, and in such instances thoughtful management will rehabilitate a number of chronically ill old patients. To rehabilitate, according to the "Concise Oxford Dictionary" (1951), means to "restore to privileges, reputation or proper condition". So it will be realized that even where physical medicine is to be had, its benefits rest on a foundation of sound general medical care.

The basis of restoration of the elderly patient is prophylaxis, and the doctor often is in a position to influence the family and the community towards this end. To deprive old people of a meaningful place in society and to loosen their contacts with the community is to hasten their rapid transition from lonely old persons to sick old patients. The importance of deprivation of human companionship in precipitating illness is illustrated by the fact that married people aged 65 years and over make comparatively small demands for admission to hospitals. In England and Wales, two-thirds of all general and mental hospital beds occupied by this age group are taken up by the single, the widowed and the divorced (W.H.O., 1959). In Garrawarra Hospital, a New South Wales Government hospital for the aged and chronically ill, 75% of all those admitted have been such "isolates". By virtue of his status, the family doctor has opportunities to participate in the provision of human contacts for these people, and he is able to direct such isolated patients to the organizations that cater for their needs. He may be able to influence the individual family to maintain its own old people's activities, their hobbies and their interests, and he could discourage the attitude, perhaps more prevalent in affluent groups, that " there is no need for Mum to do it; she should take it easy now".

Pressure may be applied in yet another field—namely, that concerned with the provision of gainful employment. The power to earn money is the old man's best proof of his own usefulness; employed old men are brighter and more interested, and their sickness rate seems to be below average (Butterworth, 1958). There are instances in practice where the doctor may be able to ensure that remunerative work is not withheld because of the candidate's age alone.

In addition to those who may seek to work normally and those fortunate enough to gain sheltered employment, there are many disabled old patients who have special skills which should not be allowed to languish. A word of encouragement from his medical attendant has sent the hemiplegic to an improvised carpentry shed, the dyspnœic man with chronic bronchitis to colouring portraits, the cardiac cripple to fashioning belts for sale, the old woman with Parkinsonism to growing roses, and the epileptic to making rugs. Every doctor could extend this list.

The dignity of old patients can be restored and maintained by insisting on their dressing properly, and on their attention to personal cleanliness, to shaving when necessary, to keeping their hair tidy, and to wearing their dentures. To praise personal efforts along these lines is to stimulate even greater achievement, while no opportunity should be lost to point out to the family and to attendants that an unkempt appearance may foil attempts at readaptation to society. Furthermore, these simple personal tasks, together with some modest participation in the easier domestic chores, often prevents that boredom and lethargy which precede physical deterioration. There is therapeutic value even in darning socks.

[1] From the original in the Mitchell Library, Sydney.

Every chance to regain or to maintain independence should be seized, and a review of domestic arrangements along the lines recommended by Alstead (1958) takes little time, but may overcome or even prevent disability. Thus, he suggests proximity of the bedroom to the bathroom, suitable handrails, avoidance of slippery floors, proper lighting, and the provision of assorted special personal conveniences to suit the requirement of the individual case.

Recently, attention has been given to the specific nutritional problems of the elderly. Some old patients develop severe anorexia. Sinclair (1956) states: "They may be anxious, bored, listless and depressed through feeling unwanted. They may be unable to purchase and prepare food, and they may have difficulty in eating it." Removal of the causes and cautious feeding up stimulate a return of appetite and induce a desire to get well, with consquent disappearance of the evidence of severe malnutrition present in these cases. But apart from this group, the admission to hospital of old people with mild malnutrition is not uncommon, our experience being more in line with that of Hobson and Pemberton (1955) in England than with that of Larkins (1960) in Victoria; retrospective analysis, after improvement has taken place under observation in hospital, may silhouette the diagnosis. Poverty, isolation and infirmity may be ultimate causes in most of these cases, and may require the attention of appropriate institutional and welfare agencies to whose attention patients may be directed. However, there remain some who can be helped at home, particularly those whose inadequate protein intake is due to the common irrational prejudice of old people against eating meat (Larkins, 1960). With tact and tolerance their cooperation can be gained and proper nutrition achieved; it is well to remember that their food should be soft, and that dairy products are acceptable.

Elderly people may manifest abnormality in several systems, yet most would report their health as "good", and the average oldster usually will not see a doctor unless he experiences an episode of acute illness (Shanas, 1960). Part of this reluctance to seek orthodox medical aid stems from a belief that "a person understands his own health better than most doctors do". There is an explanation for this belief. Sick old people often have been investigated and treated by several doctors, and they have been given different shades of opinion, varying emphasis has been placed on different aspects of their health or illness, and management has vacillated accordingly. To arrive at a full understanding of the background to illness in a patient who is hard of hearing and slow of speech, to examine fully and thoroughly a person who is stiff, confused, fumbling and over-clothed, and to arrange special investigations for a patient who is breathless, forgetful and afraid of the city streets—these exercises tax the resources of the most kindly and the most ingenious of us. Yet it is only by such painstaking inquiry that the experienced old patient can be convinced that the doctor is "really understanding my case"; and often he is right.

This is not a call for drastic and injudicious investigation. The comparative well-being of many old people is precarious, and is disturbed easily by the imposition of additional, in themselves trivial, incidents; conversely, the correction of relatively minor matters often restores disabled old persons to a state of independence sufficient for them to be able to enter into society again, despite the persistence of quite advanced irreversible organ disease. The discovery and treatment of these secondary factors require care and tenacity; seldom are special skills or techniques needed.

Routine search should be made for aggravating factors, and any unusual feature in the patient's status deserves thorough investigation. Thus, the correction of concomitant anæmia may do as much for the old man's angina or claudication as measures aimed specifically at the major symptom. Obesity is a serious added burden. But not all weight gain is due to fat; it may be the presenting sign of a failing heart. Increasing constipation may herald thyroid deficiency; a feeling of weakness commonly betrays the diabetic and less often signals nitrogen retention. Confusional or delirious states of recent onset are due often to specific disease that may be alleviated by treatment, and are rarely the first signs of a cerebral degenerative process; the main causes in old age are cardiac failure, chronic respiratory disease, acute respiratory infection, surgical operations, dehydration and electrolyte disturbances, and nutritional deficiencies (W.H.O., 1959). Periodic radiological examinations of the chest are of value at an age now known to be beset by the possibility of tuberculous disease, and they assist in determining cardio-vascular status. Nightmares, night cough, night restlessness, nocturnal dyspnœa, and angina while lying flat may all signify incipient congestive heart failure (Farenzi and Talso, 1960). The insomnia of the chronic bronchitic may be due in part to his ephedrine therapy. His diarrhœa may be spurious when associated with impacted scybala. Like the baby at the other extremity of life, the senile woman may cry, or scream, or fall out of bed because she is hungry, or wants to pass water, or her bed is wet, or she is cold. These are but a few examples of common remediable defects which may be put right quite simply. Their correction contributes to the rehabilitation of their hosts.

Our modern therapeutic armamentarium is not invincible, but it is powerful enough to bring relief and return of function in a great number of disabilities. There is no place for a philosophy of despair, but there is need for accurate diagnosis if failures are to be limited. There is need as well for special precautions in the use of drugs for the treatment of old people, and Marjory Warren (1960) has reminded us of the following principles:

1. Drug therapy should be as "streamlined" as possible, limited to the fewest drugs and ordered in the simplest way.

2. Treatment should be adequate and given with as little delay as possible.

3. Psychologically it is always better to avoid injections if oral preparations are satisfactory, as patients quickly become dependent upon the "prick".

4. The frailties of old people should be considered in the following ways and special precautions taken when prescribing for them: (*a*) Be sure that an elderly patient has heard and understood instructions. (*b*) Warn the patient of possible side-effects, and advise him what to do if they occur. (*c*) Be sure that eyesight is good enough to read the directions.

5. Ascertain that the patient is mentally reliable to take what has been prescribed, and that he understands the importance of doing so.

6. Arrange that he is able to reach the surgery or hospital when his drugs are finished, or alternatively that he has someone interested who will.

Naturally, any domiciliary nursing service in the area should be asked to assist in these matters.

No symptoms that can be alleviated should be overlooked, and in particular, appliances that are in everyday use by the rest of the community should be fully exploited on behalf of the elderly. The general well-being of the patient is boosted by correction of any visual defect or by the provision of a hearing aid, or by the use of proper footwear. We have seen a hypertensive old woman, crippled by osteoarthritis, whose numerous disabilities were shrugged off when new batteries were fitted to her hearing-aid, only to return, accompanied by doleful lamentation, when she was unable to hear. Then there was the dysphasic woman who regained some independence when she was enabled to walk by the fitting of specially shaped boots to her deformed feet. Wheel-chairs and bedside commodes in appropriate circumstances are important aids towards independence; so are tripod sticks for the hemiplegic, the arthritic and the unsteady; crutches for appropriate disabilities; combined knife-forks for one-armed patients; long-shafted shoe-horns for those unable to flex their lower limbs; and other ingenious aids such as may be seen in established rehabilitation centres.

Encouragement of mobility is important. For some member of the family to take the frail old aunt gently by the arm and walk her around the garden or down the side-walk two or three times each day, discussing with

her the passing parade, is of prophylactic and therapeutic value. The activity and light exercise contribute towards good sleep at night; if, in addition, long spells of sleep during the day are denied, unnecessary nocturnal drugging may be avoided. The family should be so trained that its orientation is towards mobility of the sick old patient, unless the doctor has not only ordered confinement to bed, but has prescribed the degree and duration of that confinement. Neglect of this principle may lead to the bed-fast state with resulting flexion contracture deformities of the legs, osteoporosis, and refractory incontinence. The picture drawn by Asher (1947) might be borne in mind:

> Look at a patient lying long in bed. What a pathetic picture he makes! The blood clotting in his veins, the lime draining from his bones, the scybala stacking up in his colon, the flesh rotting from his seat, the urine leaking from his distended bladder, and the spirit evaporating from his soul.

After ataxic or paretic episodes, constant encouragement and stimulation of the patient are essential to ensure some return of function. It is better to risk being regarded as a crank in this connexion than to be put off by the numerous excuses that will be found to delay the institution of reeducation. Pain can be controlled by analgesics, apprehension by tranquillizers, cold by clothing, and other disabilities may have specific remedies. But only "will-power" requires repeated reinforcement by the doctor; every trick of persuasion may be needed. Needless to say, efforts will be made whenever possible to enlist the added assistance of skilled exponents of physical medicine.

It may become necessary, in order to obtain the benefits of physiotherapy, or of speech therapy, or of chiropody, or for other special reasons, to admit the sick old patient to a geriatric hospital with a view to his rehabilitation. In many such instances the doctor will then have the task, usually a difficult one, of explaining to the family that the patient will return home; and well in advance of his return, detailed instructions should be given on ways to minimize home conditions previously causing stress. With Linden (1959), the modern geriatric hospital realizes that "older people, arriving at the province of seniority in need of institutional management, are individuals who have already been victimized by a variety of forms of starvation—emotional, social, nutritional, economic, medical and surgical". The therapeutic programme will be designed increasingly to take care of these various aspects with the specific needs of individuals in mind. It is important that discharge from hospital should not be followed by rapid deterioration in health, and much may be done by the family doctor, working in conjunction with nursing and welfare agencies where possible, to prevent any breakdown.

Then there is the problem of the old patient, rehabilitated in hospital, but with no home to which he can return. To keep him in hospital is to "block" a bed indefinitely, while at the same time it defeats the object of his management—namely, to render him fit to readapt himself to society. The practitioner will undoubtedly support any reasonable effort aimed at the provision of suitable residential accommodation in his area for people capable of self-care. Ideally, this type of unit should be within easy reach of the resources of a hospital, so that the doctor, to whose care the patients are returned, may avail himself of those resources as conveniently as possible. Opinion as to the best way to provide such accommodation varies considerably, but there probably is general agreement that elderly people best accept living in relatively small groups in the kind of house that they have always occupied, run by a housekeeper if necessary, situated in quiet traffic-free surroundings, in areas inhabited by ordinary families of all ages and both sexes.

There seems to be little doubt that the family doctor is likely to play an increasingly prominent part in satisfying the requirements of the elderly sick, and some of the ways in which he can help have been summarized. He is in an immensely strong position to aid because of his natural association with the old patient; in most cases he has been asked to help; there is no hint of the patronage which may be suspected and resented by old people when representatves of social, charitable or other agencies offer assistance.

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SIDNEY SAX, M.D., M.R.C.P. (Ed.), D.P.H.,
Senior Medical Officer, N.S.W. Department of Public Health.

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A SYMPOSIUM ON ANTICOAGULANT THERAPY.

A SYMPOSIUM on anticoagulant therapy was held at the Royal Society of Medicine on November 18 and 19, 1960. It was attended by over 50 workers in this field, from many parts of the world, including Australia. Divided broadly into two sections, it dealt first with the problems of laboratory control of this form of therapy, and secondly with the clinical aspects, under the chairmanship of Professor Sir George Pickering.

In the first paper of the symposium, PROFESSOR R. B. HUNTER (Dundee) reviewed the action of orally administered anticoagulants on the blood coagulation mechanism from their discovery to the present day, dealing also with the various methods of laboratory control that can be used. He said that orally administered anticoagulants had an effect on prothrombin Factor VII, Factor IX and Factor X, and that this affected both the intrinsic and the extrinsic coagulation systems. This action had become further complicated by the discovery that oral anticoagulant therapy was a safe procedure and certainly that the risk from its use was less than the incidence of thrombo-embolism.

PROFESSOR S. P. V. SHERLOCK (London) discussed anticoagulants and the liver, and drew attention to the fact that there was a much lower incidence of coronary thrombosis amongst patients with cirrhosis of the liver. She pointed out that patients with liver disease had a deficiency of lipoprotein lipase, a disturbed clotting mechanism with deficiencies of Factors V, VII, IX and X, and in many cases a platelet deficiency also. She went on to deal with the question of anticoagulants in patients with liver disease and was unable to show any effect on liver function tests from orally administered coagulants. She had been able to find records of only six patients who had developed jaundice whilst receiving phenindione for which the drug seemed responsible, but was unable to find out what type of jaundice had been produced. The pattern of toxicity was similar to what one would expect with drugs containing benzene rings and pointed out that jaundice might occur *per se*, but was very rare.

Then followed two sessions under the chairmanship of DR. R. G. MACFARLANE (Oxford) dealing with the aspects of laboratory control.

PROFESSOR DE NICOLA (Pavia) outlined the place of the Quick one-stage test, stating that he considered results should always be expressed as a percentage of normal in terms of coagulation activity, and provided one was familiar with that technique and was using a suitable thromboplastin, that had worked very well in practice.

PROFESSOR P. A. OWREN (Oslo), in a paper "Laboratory Control of Anticoagulant Therapy", pointed out that the Quick one-stage test had shortcomings which were well known. (i) It was sensitive to variations of Factor V and fibrinogen. (ii) The specified calcium concentration became imperfect in the hæmatocrit if the tested blood was outside the normal range. (iii) Quick's original method with rabbit-brain thromboplastin was not sufficiently sensitive for the control of anticoagulants, owing to the fact that there was a change of only seven seconds from the control level to the therapeutic level with the use of an absorbed plasma dilution curve. He went on to elucidate how the shortcomings had been overcome, first by the P. and P. test and now "Thrombotest", the latter being designed to be extremely simple to use, and to take account of the depression of prothrombin and of Factors VII and X in relation to anticoagulant therapy, at the same time providing a suitable reagent for universal use. He also mentioned the interpretation of the laboratory test, and emphasized the importance of expressing the results in terms of percentage coagulation activity rather than as an index ratio or in multiples of normal, as those could vary widely according to the thromboplastin used, the standards of the reagent and the skill of the technician.

DR. W. WALKER (Dundee) then described his experiences with "Thrombotest", and pointed out that the simplicity of the test done on capillary blood should go a long way towards solving the problems involved in controlling large numbers of out-patients on anticoagulant therapy. Teething troubles did occur with "Thrombotest", but they were trivial and were largely a matter of paying attention to detail. Illustrating that point, Dr. Walker said that he knew of one fairly large clinic that had abandoned "Thrombotest" prematurely after a short and apparently discouraging trial, and of others that hesitated to use the method through force of habit and inadequate appreciation of its advantages. He outlined the technique in detail and demonstrated the advantages of the method.

PROFESSOR T. B. COUNIHAN (Dublin) opened the discussion. He said that his experience was limited to the use of the Quick one-stage method, in part because he had been put off by the cost of "Thrombotest", although he had appreciated that discrepancies did occur with the Quick method.

DR. H. LEMPERT (Manchester) said that using his thromboplastin he had found the Quick one-stage method extremely successful.

Professor Owren said that, in relation to expense, he had found that in his clinic the cost in fact had fallen appreciably.

DR. R. P. BIGGS (Oxford), in her paper on "Laboratory Control of Anticoagulant Therapy", drew attention to the fact that for people who were interested in blood coagulation, the problem of control presented little difficulty, but that when tests were widely employed in routine use by people who had no particular love for them, then random variability occurred to a great extent in the laboratory results. She would include the Quick one-stage method as having a high degree of random variability. She drew attention to the variables which occurred in various laboratories, and indicated that an exact balancing of the dose of anticoagulant drug was extremely critical, particularly for out-patients. The use of "Thrombotest" was probably the method of choice for smaller laboratories where there was no individual worker who was specially devoted to blood coagulation work.

DR. R. AIDIN (Worthing) followed with a paper discussing the position of treatment from the pathologist's point of view.

There followed lively discussion on the merits of "Thrombotest" and the Quick one-stage method, and it was held that the Quick one-stage method had certain disadvantages that were not present with "Thrombotest". Dr. Biggs concluded the discussion with the comment that it was probably better for people who had no primary interest in the coagulation field to use a method which somebody else's vast experience had gone into (which could be said about "Thrombotest"), rather than to try to pit their lack of experience against otherwise almost insuperable odds.

The last session of the first day was under the chairmanship of PROFESSOR H. W. FULLERTON (Aberdeen).

PROFESSOR KOLLER (Zurich) told of his experience with fibrinolysis in the treatment of thrombo-embolic disease. Experience had shown that administration of an activator, streptokinase or urokinase, which acted upon the fibrinolytic system of the organism, had a more pronounced effect than the application of the activated enzyme itself. The big problem was that of dosage, in order to produce a strong fibrinolytic effect in plasma, and that had to be determined for each individual patient, as there was considerable individual variation. Professor Koller described his experience using that form of therapy on over 100 patients, and concluded that in venous thrombosis dissolution of the clot could be obtained provided that the thrombus was not more than three days old, because as soon as organization of the thrombus began, fibrinolysin became inefficient. Clinical evidence also suggested that pulmonary emboli could be dissolved with that treatment, but it was difficult to prove. In arterial thrombosis the situation was different, as there was not only the age of the arterial thrombosis, but also the age of the necrotic infarcted area to take into account, and that usually became irreversible in between two and six hours. However, if that therapy could be given earlier under favourable conditions, it might still dissolve the thrombus. Professor Koller mentioned that now that highly purified preparations of streptokinase and fibrinolysin were available, side effects were minimal. The safety of that treatment was further enhanced by the availability of *e*-aminocaproic acid as an antidote, which was extremely effective and very well tolerated.

Professor Owren dealt with the selection of patients for life-long anticoagulant therapy and the organization of therapy in large groups of patients. Patients were classified into two main groups—a high-priority group, in which anticoagulants had a marked effect on mortality and disablement, and a second-priority group, in which the effect of anticoagulant therapy was less well established. The high priority group was divided into five sub-groups: (i) rheumatic heart disease with embolism; (ii) angina pectoris of less than two years' duration; (iii) one attack of myocardial infarction; (iv) atherosclerosis in the legs without signs or symptoms of coronary or cerebral atherosclerosis; and (v) intermittent insufficiency of the cerebral circulation, presumably due to thrombosis. The second-priority group included three main categories: (i) rheumatic heart disease without embolism; (ii) angina pectoris of more than two years' duration; (iii) two or more myocardial attacks of infarction. Professor Owren said that in Norway probably 1% of the population in the next ten years would need to be on anticoagulant therapy. He then discussed the problem of handling such a large number of patients with the use of "Thrombotest" as a method of control, and finally indicated that his organization was inexpensive, in that his costs were about £1 per year per patient excluding the cost of the drugs.

On the second day, under the chairmanship of PROFESSOR O. MEYER (Madison), DR. P. H. WOOD (London) opened with a paper on acute coronary insufficiency. He first defined the condition and showed conclusively that a five-fold reduction in mortality could be obtained by using anticoagulant therapy.

DR. A. S. DOUGLAS (Glasgow) dealt with the results of the Medical Research Council's trial on long-term therapy, and commented on some of the criticisms which had been directed at that trial, and also some of the difficulties which were encountered.

DR. M. M. SUZMAN (South Africa) presented his paper on the evaluation of the effect of long-term anticoagulant therapy on the prognosis of coronary artery disease. The paper had involved a tremendous amount of work, and included observations on over 2000 patients. Dr. Suzman showed that the fatality rates in survivors of myocardial infarction maintained on long-term treatment were consistently lower than the rates observed in survivors whose treatment with anticoagulants was limited to the acute phase of the presenting attack of infarction, and moreover, the differences in death rate were observed in all age groups. A history of infarction prior to the presenting attack materially increased the mortality in both groups of patients, but to a far greater extent in those not receiving long-term anticoagulant therapy. Amongst the patients who discontinued their long-term treatment, the subsequent fatality rates were higher than in those who maintained their treatment without interruption. Dr. Suzman pointed out that it would seem logical that for maximum benefit the treatment should be started early in the course of coronary artery disease, at a time when angina pectoris was present and before the patient had suffered the impact of the first infarction.

Discussion was opened by DR. C. S. MCKENDRICK (Liverpool), who drew attention to the fact that there was a limit to the period during which physicians could sit on the touch-line while their patients were dying, and that the problem of handling those patients was tremendous. Many other speakers also commented on that aspect.

DR. S. SEVITT (Glasgow) dealt with the indications for anticoagulant therapy in peripheral arterial disease. He pointed out that that was a prophylactic rather than a curative form of therapy, and could be as effective as one would wish. Nevertheless, anticoagulant therapy had an important place in the management of patients with occlusive or arterial disease.

DR. J. L. STAFFORD (London) illustrated the experience of two teaching groups in the management of long-term anticoagulant therapy in relation to the organization and costs of such a service, and concluded that in his experience each patient's visit to the clinic, including treatment, was in the order of £1. He thought that that was high because of high transport costs. The cost would probably be cut down in the future.

SIR WILLIAM MORROW (Australia) talked on the problem of long-term anticoagulant therapy in Australia, with particular reference to country practice, and told of the extremely creditable performance of country general practitioners in coping with that type of therapy over vast distances, and with minimal laboratory facilities.

DR. D. STARK MURRAY (Kingston-upon-Thames) opened the discussion, saying that he conducted his clinic in an entirely different way than had been described so far in that a particular region including physicians, pathologists, and general practitioners, cooperated in his area, and that the majority of patients were nursed at home and a bedside technique was developed for the control of anticoagulant therapy, which seemed to work satisfactorily.

After lunch, under the chairmanship of Professor Sir C. W. Pickering, there was a panel discussion. The panel members included Professor R. B. Hunter (Dundee), Professor P. A. Owren (Norway), Dr. C. H. Millikan (Mayo Clinic, U.S.A.) and Dr. P. H. Wood (London). Extremely lively discussions followed, ranging over a wide field. This was followed by Dr. E. Petric (London), who described the general practitioner's role in anticoagulant therapy, and his endeavours to control patients on anticoagulant therapy while in general practice. Dr. S. Sevitt, of the Birmingham Accident Hospital, in his paper on "Anticoagulant Prophylaxis against Venous Thrombosis and Pulmonary Embolism in Injured Patients", showed that from their experience it was reasonable to advocate prophylactic anticoagulant therapy for all patients who were particularly at risk of venous thrombosis and embolism, and suggested that that might be particularly applied to those over the age of 45 years who were about to undergo a period of bed rest which was likely to be of more than two or three days' duration, provided that there was no other contraindication.

DR. C. H. MILLIKEN (Rochester, U.S.A.) presented evidence on the use of anticoagulants in cerebral vascular disease. He made the point that he was strongly limited to a very few categories, and that those categories were important, but made up only a small proportion of all patients with that type of disease and included the following indications: intermittent insufficiency in the carotid system; intermittent insufficiency in the vertebro-basilar system; and recurrent embolic phenomena from cardiac sources.

DR. J. MARSHALL (London) also dealt with anticoagulants in cerebral vascular disease. He outlined the difficulties in diagnosis, especially in distinguishing hæmorrhage from infarction, and the lack of knowledge of the natural history of the disease. He concluded that he had failed to show any advantage for anticoagulant therapy in acute non-embolic cerebral infarction. That did not mean that anticoagulants were harmful. In relation to long-term treatment, his conclusions had been similar to Dr. Milliken.

DR. R. W. EMANUEL (London) gave evidence on the use of anticoagulants in pulmonary hypertension and mitral valvular disease. He showed that in cases of mitral stenosis complicated by severe pulmonary hypertension, anticoagulant therapy protected patients from fatal thromboembolism while they were awaiting cardiac catheterization. In cases of mitral stenosis uncomplicated by pulmonary hypertension, anticoagulants appeared to diminish the risk of systemic emboli. In subacute thrombo-embolic pulmonary hypertension, anticoagulants if used sufficiently early might cure the disease. That form of treatment appeared to have no effect on the natural history of primary pulmonary hypertension, and might cause fatal hæmorrhage in cases of Eisenmenger syndrome.

DR. D. G. CHALMERS (Cambridge) opened the discussion. He agreed with Dr. Sevitt's work, having shown similar results with prophylactic anticoagulant therapy in gynæcological surgery.

PROFESSOR HUNTER remarked that one of the most important things was the question of maintaining the standard of care in the community. The advantage of the "Thrombotest" method was that it would give reproducible results which could be dispatched from one end of the world to the other, and would give the same results when handled by semi-skilled workers. He believed that that was of fundamental importance.

Correspondence.

A CASE OF MISTAKEN DIAGNOSIS.

SIR: Dr. Arthur D'Ombrain's letter (MED. J. AUST., February 4, 1961) on "A Case of Mistaken Diagnosis" requires comment on two points.

Firstly, he states "Tobacco and alcohol destroy vitamin B_1, which is essential for the nutrition of nerve tissue anywhere in the body, as is evidenced by the occurrence of peripheral neuritis in alcoholics", but later qualifies the statement and describes alcohol as being an accessory factor. Surely it is an established fact that alcohol is neither a primary nor accessory factor in the destruction of vitamin B_1. While peripheral neuritis in alcoholics is indicative of vitamin B_1 deficiency, this is brought about by lack of intake and not destruction. Very few alcoholics maintain an adequate diet. It should be noted that beer, as referred to later in this letter, does in fact contain vitamin B_1, although not in sufficient amount to be adequate as a sole source.

Secondly, Dr. D'Ombrain poses the question as to whether the "mild arsenical" content of beer is responsible for his observation that "beer drinkers are more vulnerable than spirit drinkers". Although estimates vary as to the normal amounts of arsenic found in the body, one or two are worth noting. Mattice and Weisman[1] show blood to contain 0·85 p.p.m., and Szep[2] quotes hair as having 0·3 to 0·7 p.p.m. of arsenic and the amount in nails as ranging from 1·5 to 4·0 p.p.m. The arsenical content of Victorian beer lies within the range of 0 to 0·04 p.p.m. It is reasonable to suggest that this applies to Australian beer in general, as all are made from similar raw materials which are the sole source of arsenic. Under the *Victorian Health Act*, this is approximately one-fortieth of the amount allowed in many common foods, excluding sea foods. The latter contain abnormal amounts of arsenic, oysters 3 to 10 p.p.m. and crustaceans up to 170 p.p.m.

In spite of the fact that there may be clinical differences between beer and spirit drinkers, with the above points in mind, it would appear unreasonable to suggest that these could possibly be related to the "mild arsenical" content of beer.

Yours, etc.,

F. HAROLD,
Chief Chemist.
Carlton and United Breweries Limited,
16 Bouverie Street,
Carlton, N.3,
Melbourne.
February 13, 1961.

SYDENHAM'S CHOREA: ITS RELATIONSHIP TO RHEUMATIC INFECTION AND PSYCHOLOGICAL ILLNESS.

SIR: We are grateful for the interest which your correspondent, Dr. Bartholomew, has shown (MED. J. AUST., January 7, 1961) in our recent article on Sydenham's chorea. The article was specifically written in a general form, and some technical statistical details deliberately omitted. We are able to give answers to some of Dr. Bartholomew's questions.

Our statement that the average intelligence quotient of our group of patients on the W.I.S.C. was significantly below the general population average was based on statistically significant figures ($0{\cdot}014 > P > 0{\cdot}012$, using a two-tailed critical ratio test). The mean I.Q. of our group was

[1] *Amer. J. med. Sci.*, 1937, 193 : 413.
[2] *Z. physiol. Chem.*, 1940, 267 : 29.

91 and the standard deviation 15·36. It will be observed that the mean was already stated in our report, though we preferred to speak of it as "the average I.Q.". We omitted the standard deviation since, for the general reader, we preferred to describe variability less technically, in terms of the numbers falling in each set of descriptive categories. Incidentally, we would disagree with Dr. Bartholomew's contention that the range *and* the standard deviation (italics ours) should be given when reporting statistical findings of this kind. One could certainly advance arguments for presenting the standard deviation, but two measures of variability are by no means necessary.

Dr. Bartholomew asks further what is meant by the term general population average. As indicated in parentheses in our report, for the W.I.S.C. this is an I.Q. of 100. The W.I.S.C. was standardized in such a way that, at each age level in the standardization population, the mean total score was set equal to an I.Q. of 100, and the standard deviation equal to 15 I.Q. points. The standardization procedure thus ensures that the expected mean I.Q. still remains 100 for this test, even though children of widely varying ages are included. It was in this sense that the term "general population average" was employed in our report, and its use in this context seems quite defensible. What might be questioned is whether the U.S. standardization norms are also adequate for Australian children; but, since evidence is not available to the contrary, local practice proceeds on the assumption that there is no significant difference.

Dr. Barholomew also comments on our statement "the absence of bright children was statistically significant". This represented an attempt to express simply the facts, that the mean I.Q. of our group differed significantly ($P<0{\cdot}05$) from the expected population I.Q., and that there were no children of bright normal intelligence or better in our sample. This finding does raise the whole problem of sampling. However, if we are to exclude speculation, we can merely state that the patients in our study were 20 consecutive children admitted to the Royal Children's Hospital with chorea.

Yours, etc.,

IAN WATERHOUSE,
HOWARD WILLIAMS,
WINSTON RICKARDS.

Royal Children's Hospital,
Melbourne.
February 15, 1961.

ABORIGINES AND LEPROSY IN WESTERN AUSTRALIA.

SIR: Dr. Davidson suggests that if the whole of Section 10 of the *Native Welfare Act* 1905-1954 of Western Australia had been published in my letter of January 28, it would have shown that the purpose of the "leper line" is to protect the natives. Actually the whole of Section 10 of this Act contains some 1650 words, and it would have occupied approximately one page of this Journal. The feelings of the Editor were anticipated and only the essence of the Act was quoted, and the remainder is fairly obvious camouflage.

Dr. Davidson states that a native may receive a permit to come south of the 20th parallel of south latitude for reasons of employment other than droving. This statement is nearly correct, but the error is vital. In the case of droving stock, it is not the native who receives a permit, but the employer, and "the holder of the permit . . . will if so required by the Minister cause the native to submit himself for medical examination". This is a classical example of pukka sahibism. One could think that the native was the squatter's chattel.

I perused the writings of experts on leprosy, and nowhere could I find this form of quarantine suggested. As far as the prevention of leprosy is concerned there was general agreement on the following points.

1. Education measures directed toward early recognition.
2. Facilities for specialist consultation and bacteriologic diagnosis.
3. Notification to the local health authority.
4. Immediate isolation of lepromatous patients, preferably in a leprosarium.
5. Home isolation with clinic supervision.

Nowhere in these writings was there any suggestion that a blanket cover of geographical segregation would be of any help. It would seem that the origin of the leper line arose from an ill-informed (19th century) fear of leprosy by the whites.

R. G. Cochrane, in his book "Practical Textbook of Leprosy", makes the following statement: "Too often leprosy regulations penalise the poor and the outcast, and leave the rich and influential unaffected."

The leprosy situation in Northern Territory and Queensland is somewhat similar to that in Western Australia, but there is no leper line in these States. Limiting the freedom of movement of non-lepromatous individuals is certainly an act of discrimination against them.

A few years ago the leper-line Act was used in a non-medical capacity against a group of natives in the Port Hedland area. Some natives from the Port Hedland area crossed the 20th parallel to assist some of their not so fortunate friends. These liberators were subjected to interference by the police under the leper-line legislation.

"Health legislation" used in this capacity is surely an anachronism.

Yours, etc.,

BARRY CHRISTOPHERS.

366 Church Street,
Richmond,
Victoria.
February 16, 1961.

MEDICAL GROUP VISIT TO U.S.S.R.

SIR: It is desired to advise members of the profession that a group of Australian doctors will be visiting the U.S.S.R. during April and May of this year. They will travel by air, and spend approximately 22 days in the country. Most of the group are senior consultants, comprising surgeons, physicians, and most of the specialties, but some general practitioners are included. They will travel together, and it is understood that accommodation, interpreters, and such details are being arranged. Anyone wishing to join the group may obtain particulars from the undersigned.

Yours, etc.,

NOEL HIGHAM,

230 Lyons Road,
Five Dock,
New South Wales.
February 19, 1961.

CONSCRIPTION OF MEDICAL OFFICERS.

SIR: Some reference was made recently in your correspondence columns to industrial conscription of medical officers.

The Cairns Base Hospital (like most country hospitals under-staffed for want of interested applicants) serves the northernmost part of Australia—roughly Cape York Peninsula, the Gulf Country and the Torres Strait Islands. The population, mostly white, is approximately 100,000. There are 30 doctors in this area in general practice, and 16 hospital medical officers to look after almost 500 hospital beds. In contrast with these figures are the numbers of professional name-plates in the Macquarie Streets and more affluent residential suburbs of our capital cities.

If the entire profession is one day conscripted, it will have itself to blame.

Yours, etc.,

R. D. SPOONER,
Consultant Physician,
Cairns Base Hospital.

Kehoe Building,
13 Spence Street,
Cairns, N.Q.
February 14, 1961.

SIR: As must surely have been the case with many others, I was shocked by the letter from the Secretary of the Hospitals Commission of N.S.W. as quoted by "R.M.O." in your journal of January 28 last; I refer especially to the final sentence, which is worth quoting again:

> I have to inform you that should you not accept the position at ——— District Hospital, to which you have been allocated, the Commission will not be prepared to approve of your appointment at any other public hospital in New South Wales.

An official reply from the Commission in the next number of the Journal refers to the benefits of organization on the

matter of these resident medical officer appointments as an aid to the young graduate—e.g., saving him multiple applications to hospitals in a competitive struggle for positions. True, the benefits of such a scheme must be obvious; but can the Commission deny the paragraph alleged above? And will the B.M.A. Council comment? Perhaps the judiciary should be asked to comment in the usual way, with special reference to the application of a phrase in the legislation which I understand the medical profession found most valuable when fighting a nationalized medical service not so long ago—namely "but not so as to constitute any form of industrial conscription".

Despite denials, can the paragraph in question be read in any other way than that "R.M.O." must take the one appointment offered? But perhaps the letter was merely unfortunately worded, so that the whole situation could be dealt with by an explanation and an apology to "R.M.O." in these columns.

Yours, etc.,

C. C. McKELLAR.

"Harley",
143 Macquarie Street,
Sydney.
February 15, 1961.

SERUM CHOLESTEROL LEVELS IN HUMAN ATHEROSCLEROSIS.

SIR: In the section entitled "Abstracts from Medical Literature: Medicine" in the issue of the Journal dated February 11, 1961, page 218, there is an interesting abstract with reference to serum cholesterol levels in human atherosclerosis (J. C. Paterson, L. Dyer and E. C. Armstrong, *Canad. med. Ass. J.*, January 2, 1960). It would appear that these observers showed results which "lent little support to the contention that the severity of atherosclerosis is related to the level of the serum cholesterol except perhaps when it exceeds 300 mg. per 100 ml.".

It is of interest to note that in 1941 I had published a work entitled "A Clinical and Experimental Investigation of the Blood Cholesterol Content in Myxœdema and Other Conditions" by the Australasian Medical Publishing Company Limited, which was accepted as a thesis for admission to the degree of doctor of medicine in the University of Sydney. In this publication there is an account of the investigation of many conditions, including 30 cases of myxœdema in which the highest serum cholesterol was 1000 mg. per 100 ml. These figures were reduced to normal with thyroid medication. In spite of high serum cholesterol figures, no definite relationship was found between the blood pressure and the serum cholesterol levels, and only one patient in this series of myxœdema, as far as I know, died as a result of atherosclerosis and its complications. Two patients were followed for period of 23 (initial serum cholesterol 400) and 32 years respectively (initial serum cholesterol 571). The first died at the age of 77 years, and the second is alive at the same age. Both had symptoms for at least one year before coming under observation, and presumably their serum cholesterol contents were elevated for that time or possibly longer.

Yours, etc.,

E. H. STOKES.

135 Macquarie Street,
Sydney.
February 15, 1961.

"PALUDRINE"-RESISTANT MALARIA.

SIR: A Pacific Islands Regiment native soldier returning from leave presented himself at the regimental aid post, Taurama Barracks, with a clinical syndrome suggestive of malaria. Blood slides were taken and found to be positive for *Plasmodium falciparum*. Urine tests were positive for proguanil excretion (Gage and Rose, 1946). This man admitted to not taking proguanil regularly whilst on leave. Two further similar cases have since occurred.

A subinoculation experiment with blood from the first patient was performed on three European non-immune volunteers who were receiving regular supervised suppressive doses of 100 mg. proguanil daily. These volunteers had negative blood slides and positive urine tests for proguanil excretion at the beginning of the subinoculation experiment. Within ten days all had succumbed to proved attacks, by positive blood slides of *P. falciparum*. Two other volunteers subinoculated with blood from one of the previous three, developed proven malaria under the same circumstances.

"Paludrine" resistance was found not to be a public health problem among military personnel at Vanimo, Sepik District, an area where we are informed (Dr. W. Peters, personal communication) malaria is holoendemic. Among 104 soldiers (94 native, 10 European) on strictly supervised proguanil suppression, only one was found to have malarial parasites. These were *P. falciparum* gametocytes; this man had returned from leave four months previously.

It is hoped that an article giving details of these findings will be submitted in the near future.

Yours, etc.,

B. B. WAINER, R.A.A.M.C., M.B., B.S. (Melbourne), Major.
R. E. ROWLEY,
Medical Research Division, Public Health Department, Territory of Papua-New Guinea.

Pacific Island Regiment,
Box 377, P.O.,
Port Moresby,
Papua.
February 6, 1961.

THE BABY'S BIRTHRIGHT.

SIR: It was indeed refreshing to read such a thoughtful, intelligent and common-sense article as the above by Dr. P. A. Earnshaw.

Since in our time the functions and methods of Nature tend to be ignored, obscured, and even ridiculed by the more materialistic theories and recommendations of the pseudo-scientists, it will soon become a vital necessity for the emotional, moral and physical welfare of humans to try to regain some appreciation of its subtleties. Not being a pædiatrician or an obstetrician, and not quite having Dr. Earnshaw's lengthy experience of practice, I may appear to be treading on what they deem to be their preserves. None the less, an enormous number of people has expressed his views, and many more will agree with him. Breast-feeding is the only natural method of sustaining the infant, and it is essential both from the nutritional and psychological points of view. The lower mortality rate bears out the first contention. The morbidity rate declines. These two aspects are generally the ones which impress the orthodox medical mind.

Less obvious are the psychological consequences. As far back as 1892, Freud showed that emotional disturbances in the mother affected lactation. It was not exactly a new discovery, but it helped to confirm officially our grandmothers' ideas. Other psychoanalysts have since produced evidence that breast-feeding heightens the resistance to anxiety in later life. This I have confirmed myself. I have also noticed the excellent teeth in breast-fed people, and the absence of dental decay. It must be emphasized that breast-feeding should be a token of love and security for the small anxious stranger in a strange world, as well as a source of perfect nourishment. To provide the former, there should be no hard and fast rules as to times of feeding, to ensure the latter the mother should be well fed and freed from anxieties all through pregnancy, and for a year of lactation. This, of course, is an ideal, in our crazy world, but it would be good business in the long run, and cheap. It is interesting to note that exactly the same situation faces the fat-lamb breeders in England at this moment. The disinclination of women to feed their children has so many roots that to explain them would fill a small volume. Few of the explanations would, in all probability, flatter the women; but as Dr. Earnshaw mentions, the medical and nursing profession are not blameless. Laziness, unwise advice, unfounded fear of losing their figures, demands of careers or employment, unconscious anxieties, and mythical unconscious fears or unconscious hostility to the child, marital unhappiness, improper nutrition, are a few of the factors involved. The so-called emancipation of women, whilst very desirable, is still in its primary stage and brings with it many emotional conflicts.

That infancy is the most important age of life has been stressed by many. The Jesuits reckoned the impressionable years as up to seven; others considered the first three years to be the most important, Freud and his many followers brought it down to one year, yet others give credence to prenatal influences. Many analysts have brought forward instances of unconscious memories going back almost to birth. Many years ago, whilst analysing a most intelligent and exceptionally well-educated man, I obtained, in a violent abreaction, what I considered to be irrefutable proof of

unconscious memories going back to the first week of his life. This, of course, will sound ridiculous to many, but then, the ultra-conservatism of many is equally ludicrous to others.

In any case, it behoves would-be parents to try to learn something about love, procreation and child management before rushing haphazardly into matrimony, for which so many are so utterly unfitted. Thirty years ago I wrote under a nom-de-plume (fortunately) an article for the lay Press, which in a somewhat mischievous moment I entitled—rather exaggeratedly, as I then thought—"The Hand that Rocks the Cradle Ruins the World". The unqualified disagreement, disparagement and even acrimonious abuse that ensued made me think that maybe there was not so much exaggeration after all! The passage of years has shown me nothing to be repentant about.

To be serious, however, women are not wholly to blame in procreating. Many think that it means security, and, apart from biological urge in some, they are doing only what the religious and political systems for ages have taught them to do; but no political "ism" in the world has yet paid more than half-hearted lip-service to the well-being of the child—the future citizen. Any two alcoholic mental degenerates can get together and produce an offspring; but it takes an uncommonly intelligent and emotionally-balanced couple to bring up that child as a normal, healthy, uninhibited mortal.

We are breeding too much—and from the wrong end. What we need is quality, not quantity, and, at that, quality in the parents. Meanwhile, as Dr. Earnshaw suggests so opportunely, let us try to elucidate and employ some of Nature's well-tried methods. After all "blind" Nature is merely the Great Architect's clumsy device, and doubtless our so-called scientists are very much wiser.

In our ignorance and perverse conceit, we cannot defy natural laws any more than man can beat the whisky bottle.

Yours, etc.,

235 Macquarie Street, Sydney. E. HASLETT FRAZER.

February 22, 1961.

AN AUSTRALIAN MEDICAL ASSOCIATION.

SIR: Having had second thoughts on the matter, many believe that at a Federal Assembly the chances of clear thinking and wise synthesis of States' views will be inversely proportional to the size of the assembly. There is a strong case against the Assembly, the least factor in which is its expense, although in all probability a costlier, less effective secretariat may result, unduly concerned with procedural matters. The real case against the proposed assembly has three main aspects.

Inherent Weakness of the Assembly.

To evolve a policy, those responsible must go through a thinking process, the substrate being well-considered, carefully evolved views and factual knowledge. The State councils are constantly at work, and are the only official bodies with the opportunity to ascertain and to deliberate upon the views of the hundreds and thousands of members, and of the local associations. Even granting that costs would not frustrate the assembly from meeting as often as it wished, it would be an unwieldy organization of some 60 members, many of whom will be strangers to each other, and too many of whom will be partly informed individuals whose responsibilities will be nebulous and short-lived.

On the other hand, Federal Councillors are responsible each to their State councils, and each State council in one way or another is responsible to its electorate—a complete and constant chain of responsibility.

As a unifying force for the Association, whose constituent parts are the State Branches, an assembly obviously leaves much to be desired.

Parallels with America, Canada and Britain are not valid, whether geographically (by distribution of population, etc.), politically, or otherwise. Parallels with parliaments are specious. Indeed, policy-makers' governments do not meet, in their wisdom, but four to five days a year. Again, comparisons with unicameral and bicameral parliaments are also invalid, for the medical association does not have a treasury and an opposition.

This brings us to our next main aspect.

A More Truly Proportionately Representative Federal Council.

With due respect, we submit for the reasons suggested above that there be no Federal Assembly. We suggest, as a constructive measure for consideration, that the Federal Council's composition (1961 *et seq.*) be as follows (e.g., on the basis of two councillors for up to the first thousand members, and one per thousand up to say six thousand, with subsequent review by a special committee once the population expands sufficiently): New South Wales, 6; Victoria, 5; Queensland, 3; South Australia, 3; Western Australia, 2; Tasmania, 2.

It will be recalled that at the Convention, representation was as follows: New South Wales, 22; Victoria, 17; Queensland, 7; South Australia, 5; Western Australia, 4; Tasmania, 2.

Surely the States which initially voted for an assembly thus constituted, will, on rethinking the matter, agree that without the proposed assembly, but with the more truly proportionately representative Federal Council, the voice of each State in policy-making would receive fair representation, and equally importantly, that such a Federal Council would be better able than the proposed assembly to take a national view of national problems, and to deliberate upon them to better effect.

Onus of Responsibility.

With the assembly dispensed with, the onus rests on each State council to consult in its own way with its electorate, and to arrive at that consensus of informed opinion in terms of which it instructs, or advises, its delegates to the Federal Council. Only by such a system would the national association have an effective, representative, readily mobilized, Federal body constantly able to be backed by the deliberations of active responsible State councils. Do the "pro-assemblers" fail to realize that Federal legislation must be felt differently in the different States, whose views can best be considered only after being carefully evolved and presented? Do the "pro-assemblers" doubt the ability of the proposed Federal Councillors to adopt a national outlook now? The "federalizing" which the "pro-assemblers" seek can come only with the creation of more States within the Commonwealth—an evolutionary and not a revolutionary process.

Conclusion.

All this is not to decry the efforts of those who have planned so long to conceive and to draft the new constitution. The assembly is best regarded as the premature neonate, whose demise will be seen as an evolutionary sacrifice, without which the more truly representative Federal Council, and the more national outlook of Federal Council, might never have come into being. The way in which each State Council makes itself responsible to its electorate is most important, but is incidental to the topic under discussion. Never has the profession had so much need for real altruism and clear thinking from those now responsible for its interests, and the interrelated interests of the public which it serves.

Yours, etc.,

Sydney. R.M.

February 13, 1961.

HOSPITAL FINANCES.

SIR: Dr. the Honourable D. A. Cameron's statements ("Notes and News", MED. J. AUST., February 25, 1961) in defence of Government policy show only how much the Federal contribution has increased over the years. But Dr. J. R. Seale has shown elsewhere that as nations have become more prosperous, the hospital's percentage of the national income has not risen—indeed, in parts it has lagged. What, then, is the position in Australia? Perhaps some university statistician or active medico-politics committee could be asked to ascertain the truth of the matter, and let it see the light of day.

Yours, etc.,

Sydney. LUX.

February 25, 1961.

ROSE AND CARLESS: MANUAL OF SURGERY.

SIR: Amongst your reviews of January 28, 1961, you spoke of the new edition of "Rose and Carless". At the

time when this book was being written, I was a house surgeon at King's College Hospital, and Carless invited me in the evenings to go up to his house in Harley Street to go over the proofs. This was always followed by a cheery little supper. The illustrations were drawn by hand, not by photography, from medical students, one of whom, Sir John Briscoe, I still correspond with. Lord Lister often came into the theatre and looked on, dressed in a frock coat. This was before the days of asepsis, and electric light was a new invention.

Rose kept very good carriage horses in his stables behind the Harley Street house.

Such little personal knowledge as this is sometimes a relief to readers of the scientific and serious papers in the Journal.

Yours, etc.,

30 Mount Street,
Perth,
Western Australia.
February 6, 1961.

FRANK G. HADLEY.

Public Health.

QUADRUPLE ANTIGEN.

IN view of the fact that quadruple antigen, for immunization against poliomyelitis, diphtheria, tetanus and pertussis, is now being made available, we reprint for the information of the medical profession the text of the pamphlet prepared by the Commonwealth Serum Laboratories for issue with their product. Particular attention is directed to the section on reactions, the warning and the details of conditions of storage. The pamphlet reads as follows.

Quadruple Antigen (Poliomyelitis-Diphtheria-Tetanus-Pertussis Vaccine): For the simultaneous immunization of infants and young children (6 months-2 years of age) against poliomyelitis, diphtheria, tetanus and whooping cough.

This product contains 30 Lf. (flocculation units) of Purified Diphtheria Toxoid, 10 Lf. of Purified Tetanus Toxoid, and 20,000 millions of B. pertussis per millilitre together with the poliomyelitis component. The strength of the pertussis component is given in terms of the International Standard authorized by the World Health Organization Expert Committee on Biological Standardization.

The poliomyelitis component is an aqueous preparation of killed poliomyelitis viruses, of Types 1 (Mahoney), 2 (MEF-1), and 3 (Saukett), in suitable proportions to ensure maximum antibody response to all three types. Preparation and standardization comply with the regulations for safety and potency of the National Institutes of Health of the U.S. Public Health Service.

Penicillin and Streptomycin are added during the preparation of the poliomyelitis component and Quadruple Antigen may contain up to 35 micrograms of streptomycin in each ml. and possibly a trace of penicillin.

0·0025% Phemerol Chloride[1] is added to Quadruple Antigen as a bacteriostatic agent, in accordance with the provisions of the British Pharmacopœia. Despite its presence, once an ampoule has been opened, any unused vaccine must be discarded.

Clinical trials in Melbourne have shown that Quadruple Antigen is well tolerated by young babies and that the antibody response to the antigenic components is satisfactory.

Indications for Use.—Immunization with Quadruple Antigen may be commenced from the age of six months, as maternal antibodies interfere with the normal response to the poliomyelitis component in younger infants.

Primary immunization with Quadruple Antigen is not recommended over the age of 2 years, as reactions to the pertussis component may be severe in older children.

Dosage.—Three injections of 1·0 ml. are recommended for infants over the age of six months and for young children.

The injection should be given subcutaneously. The interval between doses should be one month and the successive injections should be made into the opposite limb.

[1] Registered Trade Name of Benzethonium Chloride (Parke, Davis & Co.).

The necessity of maintaining the immunity to diphtheria, tetanus and poliomyelitis by "booster" doses is discussed below.

"Booster" Doses.—After basic or primary immunization in infancy and early childhood it is essential that the immunity against diphtheria, tetanus and poliomyelitis be maintained at an adequate level throughout childhood by "booster" or reinforcing doses.

The first "booster" should be given 5-7 months after the basic course of Quadruple Antigen and if this basic course is commenced during the first year of life the "booster" should consist of a single dose of 1·0 ml. Quadruple Antigen.

On the other hand, if the basic immunization with Quadruple Antigen is commenced after 18 months of age, the first "booster" should consist of 0·5 mil. of C.D.T.—Combined Diphtheria and Tetanus Prophylactic (B.P.C.) together with 0·5 ml. of Poliomyelitis Vaccine.

A further reinforcing dose consisting of C.D.T. (0·5 ml.) should be given at the kindergarten age and again when the child enters school.

It cannot be too strongly stressed that the repeated reinforcement of the immunity against diphtheria and tetanus is as important as the primary immunization. Both these diseases are just as dangerous in older children as they are in infants, whereas whooping cough is particularly to be feared in the very young.

Further, an emergency "booster" of Tetanus Prophylactic (Formol Toxoid) should be administered when the child receives a wound of a nature likely to be followed by tetanus, unless it occurs less than 6 months after completion of the basic course or within 6 months of a routine reinforcing dose.

Further "booster" doses of Poliomyelitis Vaccine are at present not considered necessary.

Reactions following Injection of Quadruple Antigen and Contraindications.—Whilst some redness and swelling may develop at the site of injection together with fretfulness and mild pyrexia for about 24 hours, reactions following injection of Quadruple Antigen are usually very mild. They are similar to those experienced by recipients of Triple Antigen (Diphtheria-Tetanus-Pertussis Vaccine).

Occasionally, however, severe reactions may follow any injection, particularly the first. In these cases the next injection should be given cautiously. Inject subcutaneously 0·1 ml. Quadruple Antigen and keep the child under observation for one hour. In the absence of untoward reaction the remainder of a reduced dose (0·5 ml.) should be given. The same procedure should be followed for subsequent injections. A total of four injections should be given, instead of the usual three.

No anaphylactic-like or other serious major reactions have been reported.

Only children in good health should be immunized against whooping cough. A history suggestive of an allergic state or a history of convulsions calls for special caution. In rare instances convulsions and encephalopathies which may even be fatal have followed pertussis immunization.

When a neurological complication such as a convulsion occurs following the administration of a vaccine containing B. pertussis further immunization should be continued with a vaccine which does not contain this component.

Further, it should be remembered that older children tend to react more severely than infants to injections of pertussis vaccines, especially repeated courses of injections.

Record of Immunization.—The parent or guardian of any child actively immunized against tetanus should be given a written statement to this effect. If this is not done the doctor who treats such a child for any injury may administer tetanus antitoxin when it is not necessary.

Warning.—Containers of Quadruple Antigen should be shaken vigorously immediately before opening and the Quadruple Antigen should be injected as soon as possible after the syringe is filled.

Storage.—Quadruple Antigen must be stored at a uniform temperature between 32° F. and 41° F. (0° C.-5° C.) preferably at the lower limit; but freezing must be avoided. Under these conditions the product remains fully potent until the expiration date stamped on the package.

The poliomyelitis component may be presumed to have lost half its activity when Quadruple Antigen has been stored at the following temperatures for the periods shown:

32° F.-36° F.—3 months. 37° F.-43° F.—2 months. 44° F.-50° F.—6 months. 75° F.—one week. 98° F.—2 days.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes, etc., are published in the *Commonwealth of Australia Gazette*, Nos. 10 and 15, of February 2 and 9, 1961.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Termination of Appointments.—The appointment of the following is terminated on reversion to the Royal Navy:—Surgeon Commander James Edward Davenport, dated 15th September, 1960.

Emergency List.

Transfers to the Retired List.—Surgeon Lieutenant-Commander Geoffrey Charles Palliser Courtney is transferred to the Retired List, dated 16th August, 1960.

Appointment.—Surgeon Commander James Edward Davenport, Royal Navy Retired List, is appointed Surgeon Commander, with seniority in rank of 16th April, 1945, and for temporary service, dated 14th October, 1960.—(Ex. Min. No. 5—Approved 2nd February, 1961).

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Promotion.—Surgeon Lieutenant Ralph Denison Upton is promoted to the rank of Surgeon Lieutenant-Commander, dated 7th July, 1960.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force

Medical Branch.

The due date for retirement of Air Vice-Marshal E. A. Daley, C.B.E., is extended to 31st March, 1961.—(Ex. Min. No. 5—Approved 25th January, 1961.)

The probationary appointment of Flight Lieutenant P. B. Sims (0313287) is confirmed.

Active Citizen Air Force.

Medical Branch.

No. 22 (City of Sydney) (Auxiliary) Squadron.—The following officers are transferred from the Reserve:—Flight Lieutenants A. I. Lane (0210562), N. A. Duckmanton (0210316), W. J. Hensley (0211188), S. B. Renwick (0212684), B. F. W. Quinn (0212389), D. C. Mackenzie (0211189); Flying Officers (Temporary Squadron Leader) A. A. Roper (0211015), G. T. Macdonald (0215268), 1st August, 1960; Pilot Officer A. J. Bookallil (0211733), 15th August, 1960.

No. 23 (City of Brisbane) (Auxiliary) Squadron.—The following officers are transferred from the Reserve, 1st August, 1960:—Flight Lieutenants (Acting Squadron Leader) I. C. Morrison (0210985) Flight Lieutenant L. G. Lukin (015224); Pilot Officers I. A. Musgrave (0115703), J. L. Morrison (0116745).

No. 25 (City of Perth) (Auxiliary) Squadron.—Flight Lieutenant F. J. G. Arnold (025085) is transferred from the Reserve, 1st August, 1960.

Air Force Reserve.

Medical Branch.

Air Cadet Gordon Holmes (016516) is appointed to a commission, 3rd December, 1960, with the rank of Flight Lieutenant.

The following Air Cadets are provisionally appointed to a commission, 3rd December, 1960, with the rank of Pilot Officer:—Max Walter Robert Weaver (016514), John Schulz (0116104), Malcolm Campbell Moffat (016525), Peter Edward Martin (016521).

The provisional appointment of Pilot Officer M. W. Lewin (0115184) is confirmed and he is promoted to the rank of Flight Lieutenant, 1st November, 1960.

The appointment of the following officers is terminated, 1st December, 1960:—Flight Lieutenants (Temporary Wing Commanders) E. H. Anderson (1177), M. L. Creightmore (291210), D. S. Thomson (251195); Flight Lieutenant (Temporary Squadron Leader) J. B. Turner (6425); Flight Lieutenant K. B. Burwood (1468), W. L. Corliss (3215), F. R. Jarrett (267210), S. Shineberg (3720), J. H. R. Tremayne (2291); Flying Officer (Temporary Flight Lieutenant) E. T. Dean (118467).

The notification regarding the termination of appointment of Flight Lieutenant N. A. Duckmanton (0210316) as approved in Executive Council Minute No. 13, dated 15th May, 1959, appearing in *Commonwealth Gazette* No. 31, dated 21st May, 1959, is withdrawn.

The following former officer is appointed to a commission, 8th October, 1960, with the rank of Flight Lieutenant:—R. F. Greenhill (019699).

Geoffrey Grant Quail (038949) is appointed to a commission, 2nd December, 1960, with the rank of Flight Lieutenant.

The following appointments, changes, etc., are published in the *Commonwealth of Australia Gazette*, No. 16, of February 16, 1961.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).

To be Temporary Major, 2nd December, 1960.—3/40169 Captain B. B. Wainer.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—1/46932 Honorary Captain N. C. Holmes is appointed from the Reserve of Officers and to be Captain (provisionally), 10th November, 1960. 1/61878 Captain (provisionally) J. H. Learmonth relinquishes the provisional rank of Captain, 2nd September, 1960, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Northern Command) and is granted the honorary rank of Captain, 3rd September, 1960.

1/39240 Captain (provisionally) D. F. Burns relinquishes the provisional rank of Captain, 1st November, 1960, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Northern Command) and is granted the honorary rank of Captain, 2nd November, 1960. *To be Temporary Lieutenant-Colonel, 1st July, 1960*—1/61802 Major J. Brieni.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—The provisional appointment of 2/158721 Captain L. A. Feain is terminated, 1st April, 1960. 2/101562 Major J. V. Roche is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), 22nd October, 1960. 2/127080 Captain (provisionally), J. P. O'Brien relinquishes the provisional rank of Captain, 30th August, 1960, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), and is granted the honorary rank of Captain, 31st August, 1960. *To be Captain (provisionally), 2nd April, 1960*—2/158721 Leo Arthur Feain.

Western Command.

Royal Australian Army Medical Corps (Medical).—The provisional appointments of Captains 5/38113 J. M. Hill and 5/26603 P. J. McGrath are confirmed. 5/26527 Captain (provisionally) D. G. Kermode relinquishes the provisional rank of Captain, 19th October, 1960, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps) (Medical) (Western Command), and is granted the honorary rank of Captain, 20th October, 1960. 5/26544 Captain T. S. Samaha is transferred to the Reserve of Officers (Royal Australian Army Medical Corps) (Medical) (Western Command), 31st October, 1960. The resignation of F5/1206 Captain (provisionally) J. P. Mandelstam of her commission is accepted, 30th September, 1960. The provisional appointment of 5/21759 Captain M. J. Williams is terminated, 31st October, 1960. *To be Captain (provisionally), 1st November, 1960*—5/21759 Martin John Williams.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Overseas Visitors.

THE following overseas visitors will be in Sydney at the times specified.

Professor W. F. Gaisford, Professor of Child Health and Pædiatrics, University of Manchester, March 3 to 11.

Dr. Gregory Pincus, Sc.D., Research Director, The Wuester Foundation for Experimental Biology, Massachusetts, U.S.A., March 25 to 29.

Professor E. G. L. Bywaters, Director, Rheumatism Research Unit, Canadian Red Cross Memorial Hospital, Taplow, England, April 22 to 27.

Professor J. T. Ingram, Professor of Dermatology, University of Durham, April 26 to May 3.

Mr. Hedley Atkins, Department of Surgery, Guy's Hospital, London (Sims Commonwealth Travelling Professor for 1961), May 1 to 15.

Professor Niilo Hallman, Professor of Pædiatrics, Helsinki, Finland, May 1 to 7.

Dr. T. Cecil Gray, Reader in Anæsthesia, University of Liverpool (Sims Commonwealth Travelling Professor for 1961), May 4 to 8.

Professor Douglas Hubble, Professor of Pædiatrics and Child Health, University of Birmingham, May 13 to 22.

Professor Bradley M. Patten, Department of Anatomy, University of Michigan, U.S.A., May 11 to 15 and May 21 to 25.

Annual Subscription Course.

The following lectures are open to members of the annual subscription course.

Professor W. F. Gaisford will give the following lectures: "Hæmolytic Disease of the New-Born", Tuesday, March 7, 2 p.m., Students' Common Room, The Royal North Shore Hospital; "B.C.G. Tuberculosis Immunization" (primarily for students), Wednesday, March 8, 10.30 a.m., Main Lecture Theatre, Royal Alexandra Hospital for Children; "Malignant Disease", Wednesday, March 8, 2 p.m., Maitland Lecture Hall, Sydney Hospital; "Chemotherapy", Thursday, March 9, 5 p.m., Doreen Dew Theatre, Royal Alexandra Hospital for Children; "Chemotherapy", Friday, March 10, 1.15 p.m., Scot Skirving Lecture Theatre, Royal Prince Alfred Hospital.

Dr. Gregory Pincus will discuss "Ovulation Inhibition and Fertility Control" on Tuesday, March 28, at 8.15 p.m., at the Stawell Hall, 145 Macquarie Street, Sydney.

The annual subscription course covers attendance at lectures by overseas lecturers and other specially arranged activities. The annual fee is £3 3s. from July 1. The fee for first and second year resident medical officers is £1 12s. 6d. Last-minute alterations to meetings are notified by advertisement in *The Sydney Morning Herald* ("Public Notices"), if possible on the day before the meeting.

Method of Enrolment and General Information.

Applications for enrolment on metropolitan and week-end courses should be made to the Course Secretary, Herford House, 188 Oxford Street, Paddington. Telephones: 31 0671 and 31 0344.

Official Opening of Herford House.

The Minister for Health, the Honourable W. F. Sheahan, Q.C., LL.B., M.L.A., representing the Premier of New South Wales, will officially open Herford House, the new premises of the Post-Graduate Committee and the Post-Graduate Medical Foundation at 188 Oxford Street, Paddington (in the grounds of the Royal Hospital for Women), on Friday, March 17, 1961. The Committee's activities have expanded and the Foundation has developed rapidly in recent years, and the Committee and Foundation are indebted to the Benevolent Society of New South Wales for making available their new offices at Herford House.

The Post-Graduate Medical Foundation.

Applications for grants from the next allocation of the Post-Graduate Medical Foundation Grants Fund will close on September 15, 1961. Since its inception in July, 1958, grants totalling more than £220,000 have been made. To continue its work and give the necessary support to the stimulation of research and medical education, the Foundation needs constant replenishment of funds. Donations may be forwarded to the Post-Graduate Medical Foundation, Herford House, 188 Oxford Street, Paddington. Telephones: 31 0671 and 31 0344.

Taxation Deductions.

Fees paid by medical practitioners who are in practice for attendance at revision and week-end courses conducted by the Committee, including living and travelling expenses, are allowable income tax reductions (Taxation File No. AF/1865).

ROYAL PRINCE ALFRED HOSPITAL: EAR, NOSE AND THROAT DEPARTMENT.

Seminar Programme, 1961.

The staff of the ear, nose and throat department of the Royal Prince Alfred Hospital, Sydney, will conduct a seminar on the second Saturday of every month at 8 a.m. in the Scot Skirving Lecture Theatre. The main speaker will not exceed forty minutes, and there will be a discussion at the conclusion of his remarks. All medical practitioners and clinical students are invited to attend.

At the next seminar, to be held on March 11, 1961, Dr. B. P. Scrivener will speak on "The Surgery of Malignant Disease of the Larynx".

Notes and News.

Scholarship Offered by the Swedish National Association against Heart and Chest Diseases.

A scholarship will again be awarded in 1961 by the Swedish National Association against Heart and Chest Diseases; the assistance of WHO has been sought in choosing a suitable candidate. The stipend will amount to 25,000 Swedish crowns for one year, which should also cover travelling expenses. The candidate should have proved ability in research, should be engaged in actual research in the field of cardiovascular diseases, and should be interested in studying a particular problem in Sweden. He should not be aged more than 45 years. Applicants are expected to present a brief *curriculum vitæ* with emphasis on research activities, together with details of proposed study in Sweden. Reprints of original work should be included. Candidates should also be endorsed by their institutes or clinics, which should ensure a post and research facilities on their return. Applications should be sent to the Chief, Cardiovascular Diseases Unit, World Health Organization, Palais des Nations, Geneva, Switzerland, to be received there not later than the end of March, 1961. It is expected that the scholarship will be awarded in June, 1961, and it is hoped that the candidate selected will be able to start his study in September, 1961. Inquiries within Australia may be directed to Dr. J. McPhie, Honorary Secretary-Treasurer, The Cardiac Society of Australia and New Zealand, 172 North Terrace, Adelaide.

Commonwealth Serum Laboratories Influenza Vaccine.

The Commonwealth Minister for Health, Dr. D. A. Cameron, has announced that exhaustive tests conducted in Australian research laboratories have established that the strains of influenza virus against which the Commonwealth Serum Laboratories' influenza vaccine gives protection are identical with those currently prevalent in Great Britain. Dr. Cameron said the C.S.L. influenza vaccine had contained a major immunizing component against these strains of the Asian influenza virus since early in 1958. It could therefore be expected to be highly protective for every person vaccinated since that time, should there occur in Australia an outbreak of influenza due to the spread of the current English virus strain. However, a reinforcing dose was desirable for persons vaccinated more than 12 months ago. Dr. Cameron said cultures of influenza virus isolated from victims of the United Kingdom outbreak had been obtained by the C.S.L. from the WHO Influenza Centre in London, which had indentified them as being of the Asian type. Test work conducted on those strains by the C.S.L. in conjunction with Fairfield Hospital for Infectious Diseases, Melbourne, showed no difference between them and the virus strains which caused the original Asian virus epidemics in Australia in 1957 and 1959. It was from them that the C.S.L. vaccine had been made.

Sixteenth International Tuberculosis Conference.

The sixteenth International Tuberculosis Conference, under the auspices of the International Union against Tuberculosis and the Canadian Tuberculosis Association, will be held on September 10 to 14, 1961, at Toronto, Canada. The Conference will take the form of a series of panel discussions and free communications (the final programme to be announced later), with visits to clinics and hospitals and a number of social events. Information relating to the

Conference may be obtained from the Secretariat which, for countries other than the Americas, is as follows: International Union against Tuberculosis, 15 rue Pomereu, Paris, XVI°, France.

A French Decoration for an Australian Medical Practitioner.

Dr. J. Kempson Maddox, of Sydney, has received a decoration from the French Government. He has been made a *Chevalier de l'Ordre de la Santé publique*, for medical services rendered to New Caledonia.

Australian Academy of Science: Burroughs Wellcome Fellowship.

The President of the Australian Academy of Science, Sir John Eccles, has announced that a Burroughs Wellcome Research Fellowship has been awarded to Mr. S. R. Johns, of Sydney. Mr. Johns will work in the Department of Pharmacy of the University of Sydney on the metabolism of indole derivatives. This is the first award of a Burroughs Wellcome Fellowship under the auspices of the Academy. The Fellowships, of which there may be up to three at any one time, are tenable for two years in any branch of medical sciences. The Academy is enabled to award these Fellowships by an endowment from Burroughs Wellcome & Co. (Australia) Ltd.

Respiratory Protective Devices.

The Standards Association of Australia announces the issue for public review of a draft Australian Standard for Respiratory Protective Devices (Document 550). This draft sets out the minimum specification requirements for most of the respiratory protective equipment described in the Australian Standard Code of Recommended Practice for Respiratory Protective Devices, A.S. No. CZ.11—1960, which has just been published. The first two sections of the draft cover scope, definitions and general requirements applicable to all types of devices within the scope of the document. The remaining sections set out specific requirements for dust respirators, chemical cartridge respirators, canister respirators, air-line respirators and self-contained breathing apparatus of the open circuit type. Comment is invited from organizations and persons with experience in the supply and use of respiratory protective devices. Copies of Document 550 may be obtained from the headquarters of the Association, 157 Gloucester Street, Sydney, and from branch offices in capital cities and at Newcastle. Comment should be forwarded not later than April 30, 1961.

Rockefeller Foundation Grants.

Among the grants made by the Rockefeller Foundation for the fourth quarter of 1960, five went to Australian Universities. The largest is a two-year grant of £50,000 to assist work on a new method of studying the effect of the adrenal hormones on salt and water balance, which has been developed at the University of Melbourne. This technique depends on the fact that the large neck folds of the Merino sheep make it possible to transplant the adrenal gland into the neck and there to connect it with the carotid artery and the jugular vein. This enables studies to be carried out with a minimum of emotional and physical disturbance of the experimental animal. The flow and composition of the arterial blood may be locally altered, and the hormone content and other constituents of adrenal venous blood measured directly in the undisturbed animal. Concurrently, through a permanent fistula in the salivary gland, the amount and variation in electrolyte loss can be quantitatively followed. By the use of this technique it has already been demonstrated that the animals possess a remarkable ability to regulate their appetites for salt promptly and precisely in accordance with salt deficit. Other important facts are emerging from this investigation, and these include the presence of a new humoral agent in adrenal secretion. The grant will help to defray the costs of a new building, which is required to provide the ample quarters necessary for long-term studies of chemical regulation and behaviour in animals the size of Merino sheep. The studies are directed by Dr. D. A. Denton.

The other grants are distributed as follows:

The University of Adelaide has received $10,000 for research on Kuru, under the direction of Professor J. H. Bennett and Professor H. N. Robson.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JANUARY 28, 1961.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1	3(1)	..	..	2	..	..	..	6
Amœbiasis	..	..	..	..	2	..	..	..	2
Ancylostomiasis	2	..	12(9)	..	..	..	4	..	18
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1	..	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	8(1)	9(9)	..	..	..	2	1	..	20
Diphtheria	..	..	..	..	..	..	..	..	..
Dysentery (Bacillary)	..	..	5(5)	4(1)	..	..	..	..	9
Encephalitis	..	..	..	..	2(2)	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	159(64)	47(30)	20(8)	27(9)	8(7)	..	..	4	265
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	..	..	..	..	..	..	..
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	..	..	..	..	..	..	..	..	..
Ophthalmia	..	..	..	..	1	..	..	..	1
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	2(2)	..	1(1)	..	3	..	..	6
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	9(5)	..	..	12(5)	..	..	..	21
Salmonella Infection	..	..	..	3(2)	..	..	..	..	3
Scarlet Fever	6(2)	3(1)	..	..	..	1	..	..	10
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	2	..	..	..	..	..	2
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	28(25)	6(4)	11(8)	3(2)	5(5)	3	..	..	56
Typhoid Fever	..	..	..	..	1	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

The Australian National University, Canberra, has received $10,000 for equipment and supplies for research in biochemistry, under the direction of Dr. A. H. Ennor, Professor of Biochemistry, and Dean of the John Curtin School of Medical Research.

The University of Melbourne has received two grants. The first is for equipment for research in microbiology in the Bacteriology Department, under the direction of Professo S. D. Rubbo, and amounts to $10,000. The second is to enable Professor Maurice Ewing to visit medical teaching and research centres while in the United States and amounts to $1950.

The Royal Australasian College of Physicians.

VICTORIAN STATE COMMITTEE.

THE Victorian State Committee of The Royal Australasian College of Physicians announces that a lecture will be given on Thursday, March 16, 1961, by Dr. R. J. Walsh, Director, Blood Transfusion Service, New South Wales Division, Australian Red Cross Society. The subject will be "Iron Metabolism". The lecture will be held in the lecture hall of the Royal Australasian College of Surgeons.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Salemann, Constantine, M.D., 1941 (Univ. Tartu), registered under Section 17 (2B), *Medical Practitioners Act*, 1938-1958, 6 Challis Avenue, Potts Point.

Sertori, Joseph Gerard, M.B., B.S., 1957 (Univ. Sydney), P.O. Box 13, Nelson Bay.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association: Best, Trevor Norman, M.B., B.S., 1960 (Univ. Sydney); Connolly, Justin Barry, M.B., B.S., 1958 (Univ. Sydney); Conrad, Peter, M.B., B.S., 1960 (Univ. Sydney); Cumming, John, M.B., B.S., 1960 (Univ. Sydney); Deacon, Michael John, M.B., B.S., 1961 (Univ. Sydney); Dubois, Reuben Stafford, M.B., B.S., 1961 (Univ. Sydney); Farrer, Paul Andrew, M.B., B.S., 1960 (Univ. Sydney); Frey, John, M.D., 1952 (Univ. Bonn); Kater, Roderick Murchison Hume, M.B., B.S., 1961 (Univ. Sydney); Maher, Peter William Odillo, M.B., B.S., 1961 (Univ. Sydney); Manollaras, Peter Theodore, M.B., B.S., 1959 (Univ. Sydney); O'Brien, Peter John, M.B., B.S., 1957 (Univ. Sydney); Sharah, Alexander Anthony, M.B., B.S., 1960 (Univ. Sydney); Stathers, George Meredith, M.B., B.S., 1961 (Univ. Sydney); Tyrrell, Margaret Dulcie, M.B., B.S., 1958 (Univ. Sydney).

The undermentioned has applied for election as a member of the Victorian Branch of the British Medical Association:

Oen, Eng-Yat, M.B., B.S., 1958 (Univ. Sydney), Queen Victoria Hospital, Melbourne.

Deaths.

THE following deaths have been announced:

GEORGE.—Noel Francis George, on February 1, 1961, in Queensland.

ALCORN.—Robert Manderville Alcorn, on February 19, 1961, at Concord, N.S.W.

KELSO.—William MacKenzie Stonehouse Kelso, on December 9, 1960, at Perth.

Diary for the Month.

MARCH 7.—New South Wales Branch, B.M.A.: Executive and Finance Committee; Organization and Science Committee.
MARCH 9.—New South Wales Branch, B.M.A.: Public Relations Committee.
MARCH 10.—New South Wales Branch, B.M.A.: Ethics Committee.
MARCH 10.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 11.—Western Australian Branch, B.M.A.: Annual General Meeting.
MARCH 14.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MARCH 15.—New South Wales Branch, B.M.A.: Hospitals Committee.
MARCH 15.—Victorian Branch, B.M.A.: Branch Meeting.
MARCH 16.—Victorian Branch, B.M.A.: Executive Meeting of Branch Council.
MARCH 16.—New South Wales Branch, B.M.A.: Clinical Meeting.
MARCH 21.—New South Wales Branch, B.M.A.: Council Quarterly.
MARCH 22.—Victorian Branch, B.M.A.: Branch Council.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full data in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this Journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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